

**Printer**

**PR2 E**

**SERVICE MANUAL**

Code Y100250-4

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**Olivetti TECNOST, S.p.A.**

Documentazione

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# PREFACE

This Service Manual provides you with all the technical information needed to install, test and service the PR2 E specialized printer.

Consult this manual when the Operator Manual, included in the printer packaging, does not provide the information needed to correct a determined error condition.

## SUMMARY

This manual is divided into chapters, where each chapter is organized in a way that the information can be accessed as simply and quickly as possible.

The first two chapters give an overview of the machine and describe its major functions; Chapter 3 describes installation and testing procedures while the remaining chapters provide the information needed to effectively service the machine.

- <b>BIBLIOGRAPHY:</b>	PR2 E Operator Manual PR2 E Programmer's Manual PR2 E Spare Parts Catalogue
- <b>SECTOR/PRODUCT RANGE:</b>	Q2 PR2
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## NOTICE

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# 1. PRODUCT OVERVIEW

## 1.1 INTRODUCTION

The PR2 E is a specialized mid-range banking printer. It can handle ordinary stationary (single and multicopy forms) and savings books for deposit/withdrawal transactions.

Very versatile, this printer can also be used in Public Administration front-office environments and in Post offices. It can be equipped with a horizontal magnetic device for reading/writing horizontal magnetic bands, or with a horizontal magnetic device and MICR (Magnetic Ink Character Reader) reader for reading the code lines printed on checks. This printer model can also be configured with different interfaces and emulations.

The PR2 Enhanced represents the evolution in terms of quality and performance of the PR2, to which it maintains complete compatibility as far as the firmware and accessories are concerned.

With respect to the PR2, the PR2 E carries the following significant differences:

- Updated design
- Improved printing speed
- Interchangeable communication ports thanks to the possibility of installing supplementary snap-in interface cards
- Availability of support software for on-line setup, the design and loading of user character fonts, design and storage of a user logo and the on-line loading of character generators
- 100 to 130 and 200 to 240 VAC  $\pm$  10% switching power supply unit
- Optional fan for delaying the activation of the thermal protection when printing complex graphics
- Dual-interface functionality in all emulations
- IBM 9068 and IBM X24 emulations.

### 1.1.1 PR2 E FACTORY CONFIGURATION

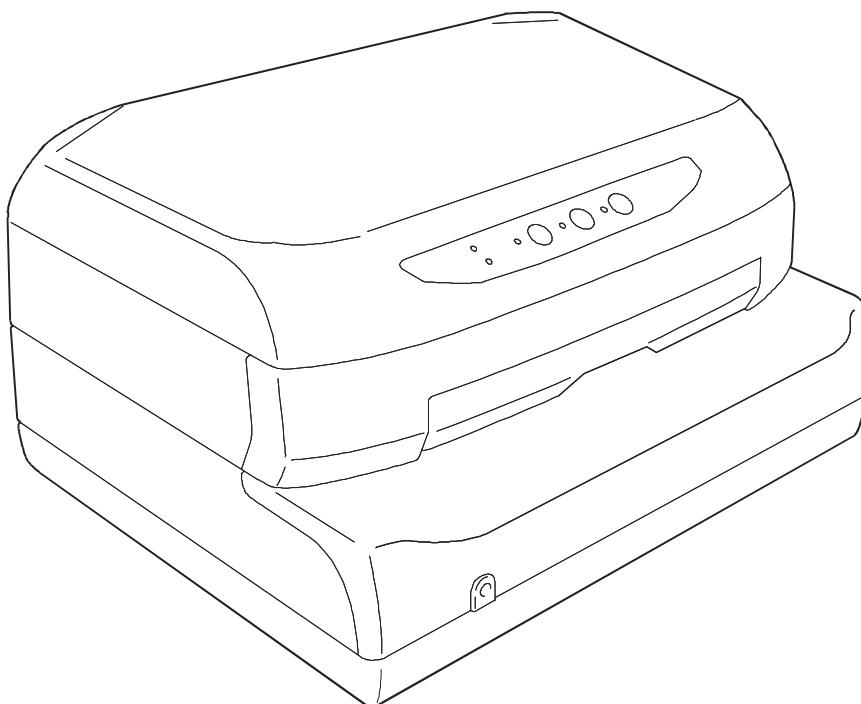
The following table indicates the different PR2 E factory configurations:

<b>Commercial Name</b>	<b>Serial Interface</b>	<b>Serial/Parallel Interface</b>	<b>Double Serial Interface</b>	<b>Horizontal Magnetic Device</b>	<b>MICR Reader</b>
PR2 E S10	X				
PR2 E D10		X			
PR2 E D12		X		X	
PR2 E D12 M		X			X
PR2 E D10 DSP			X		
PR2 E S12	X			X	
PR2 E S12 M	X				X

## 1.2 GENERAL MACHINE CHARACTERISTICS

PRINTING MODULE	Dot-matrix printhead with 24 diamond-shaped needles and overtemperature protection Printing capability: 1 original + 4 copies Savings book handling features
PRINTING SPEED	86 cps @ 10 cpi in LQ 130 cps @ 10 cpi in NLQ 260 cps @ 10 cpi in DRAFT 350 cps @ 10 cpi in HSD
PRINT QUALITY	H.S.D., DRAFT, N.L.Q., L.Q.
RIBBON CARTRIDGE	Indelible fabric, with a life span of 3.5 M characters
PAPER FEED	Front feeder with automatic document alignment. If the magnetic device is present, the savings book must be aligned manually. The machine will generate an error message.
PAPER SIZE	245 x 450 mm max. 70 x 65 mm min. For more information refer to section 1.5.
CONSOLE	Located on the printer cover, it has three buttons and five LEDs
EMULATIONS	PR40+, PR2 E and IBM PP II, X24, SNI 4915, IBM 9068
INTERFACE	Standard RS 232C serial with the possibility of installing the following interface cards: - RS 232C serial + USB - Centronics parallel.
DIMENSIONS	Width: 384 mm Depth: 280 mm Height: 195 mm Weight: 10.5 Kg.
POWER CONSUMPTION	Stand-by: $\leq 15$ W During operation: 170 W max (worst case)
POWER SUPPLY	Switching power supply: 100 to 130 VAC $\pm 10\%$ 200 to 240 VAC $\pm 10\%$

The following figure gives an overall view of the printer.



*Fig. 1-1 PR2 E Printer*

### **1.3 HORIZONTAL MAGNETIC DEVICE/MICR FEATURES**

The Horizontal magnetic device/MICR (Magnetic Ink Character Recognition) device reads characters printed on checks with magnetic ink. Horizontal magnetic device/MICR applications are compatible with the CMC7 and E13B standards.

**CMC7:** This standard uses a coding technique similar to bar codes. In this case the character consists of seven black bars of equal width and spaced by four narrow gaps and two wide gaps.

**E13B:** In this case the characters are continuous (not bars) and have a precise shape. The magnetic reader must also interpret the amplitude of the wave form and therefore not only its variation in time.

## 1.4 PRODUCT VARIABLES

VOLTAGE AND FREQUENCY	TEN 023	110/120V 50/60 Hz
	TEN 204	220/240V 50/60 Hz
POWER CORD	COR 005	Europe
	COR 041	Switzerland
	COR 042	Great Britain
	COR 043	Australia
	COR 050	USA
	COR 080	South Africa
CRT FIRMWARE	Olivetti standard + IBM X24	
	IBM 9068 + IBM X24	
	SNI 4915 + EPSON LQ 2550	

## 1.5 DOCUMENTS HANDLED BY THE BASIC MACHINE

### 1.5.1 SINGLE AND MULTI-COPY FORMS

Maximum width	245 mm
Minimum width	65 mm
Maximum recommended length	297 mm
Maximum accepted length	450 mm
Minimum length	70 mm
Single sheet weight	60 to 160 g/m <sup>2</sup>
Single sheet thickness	0.1 to 0.28 mm
Transparency	Up to 25% and uniform
Multicopy weight (chemical)	40 to 60 g/m <sup>2</sup>
Carbon paper weight	20 to 34 g/m <sup>2</sup>
Maximum printable copies with chemical paper	1+5 with average paper weight and in the NLQ/LQ print mode
Maximum printable copies with carbon paper	1+4 with average paper weight and in the NLQ/LQ print mode
Recommended weight	Original 50 g/m <sup>2</sup> , last copy 60 g/m <sup>2</sup>
Multicopy glueing	At head or on the side
Maximum weight of multicopy forms	320 g/m <sup>2</sup>
Print quality (with multicopy forms)	NLQ or LQ



## 1.5.2 SAVINGS BOOKS

Max. thickness with book open	1.8 mm
Max. difference in level between pages	1.2 mm
Cover thickness	0.2 to 0.5 mm
Type of binding	Thread-sewn, without metal staples or clips
Book preparation	Must be carefully flattened before being inserted into the machine
<u><i>Book with Vertical Seam</i></u>	
Open book width	241.3 mm/9.5" max.; 150 mm/5.9" min.
Maximum length	220 mm
Minimum length	85 mm
Union of external corners	3 to 14 mm radius
<u><i>Book with Horizontal Seam</i></u>	
Open book width	241.3 mm/9.5" max.; 150 mm/5.9" min.
Maximum length	220 mm
Minimum length	165 mm

## 1.6 ACCESSORIES

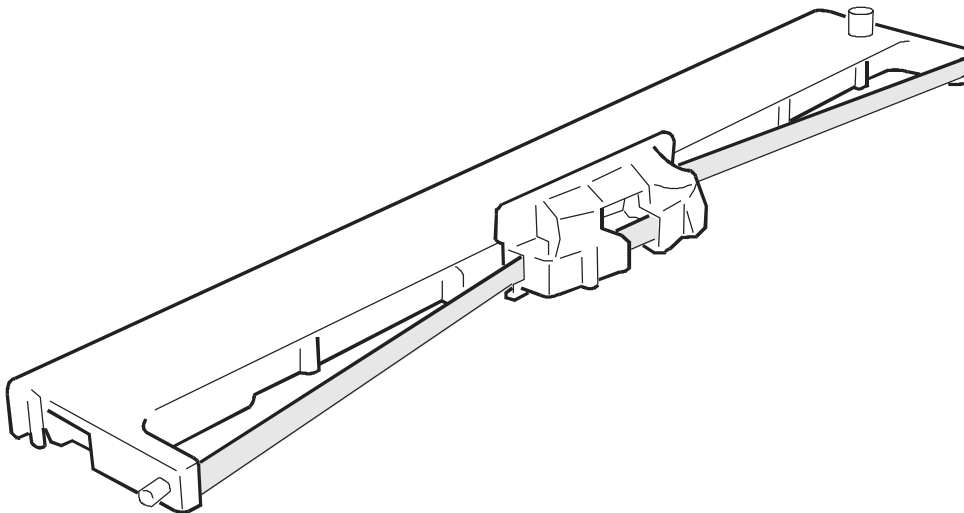
This section describes the accessories available for the PR2 E printer.

### ***BLACK NYLON SNUG CART RIBBON CARTRIDGE***

Ribbon cartridge specific for the needle printhead, with a life-span of more than 3.5 million characters. The cartridge is installed in the machine by opening the printer cover, with automatic printhead positioning if the printer is powered on or manual positioning if powered off, and lifting the print assembly by using the appropriate lever.

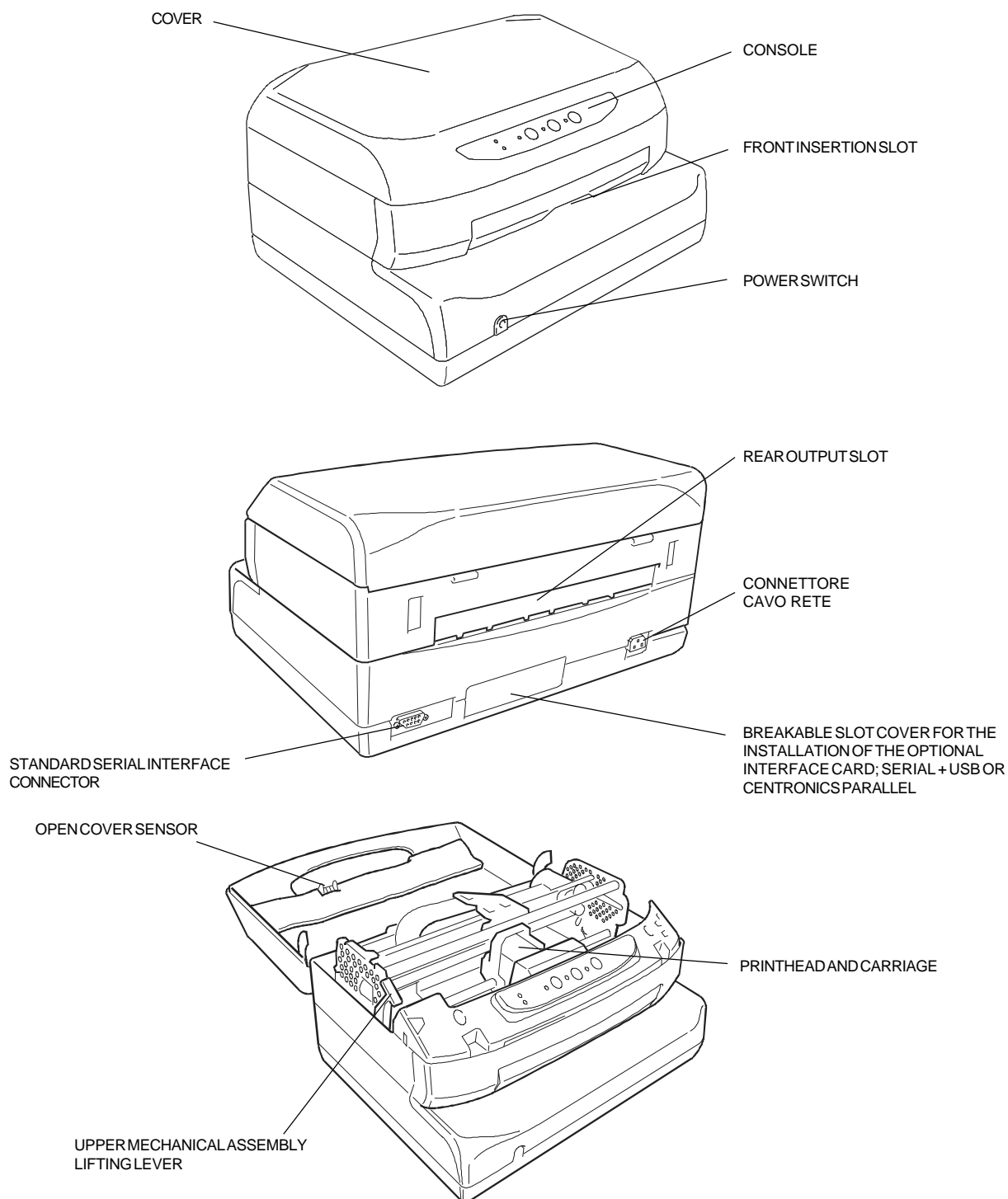
### ***INDELIBLE NYLON SNUG CART RIBBON CARTRIDGE***

The same as the BLACK NYLON SNUG CART but with indelible ink.



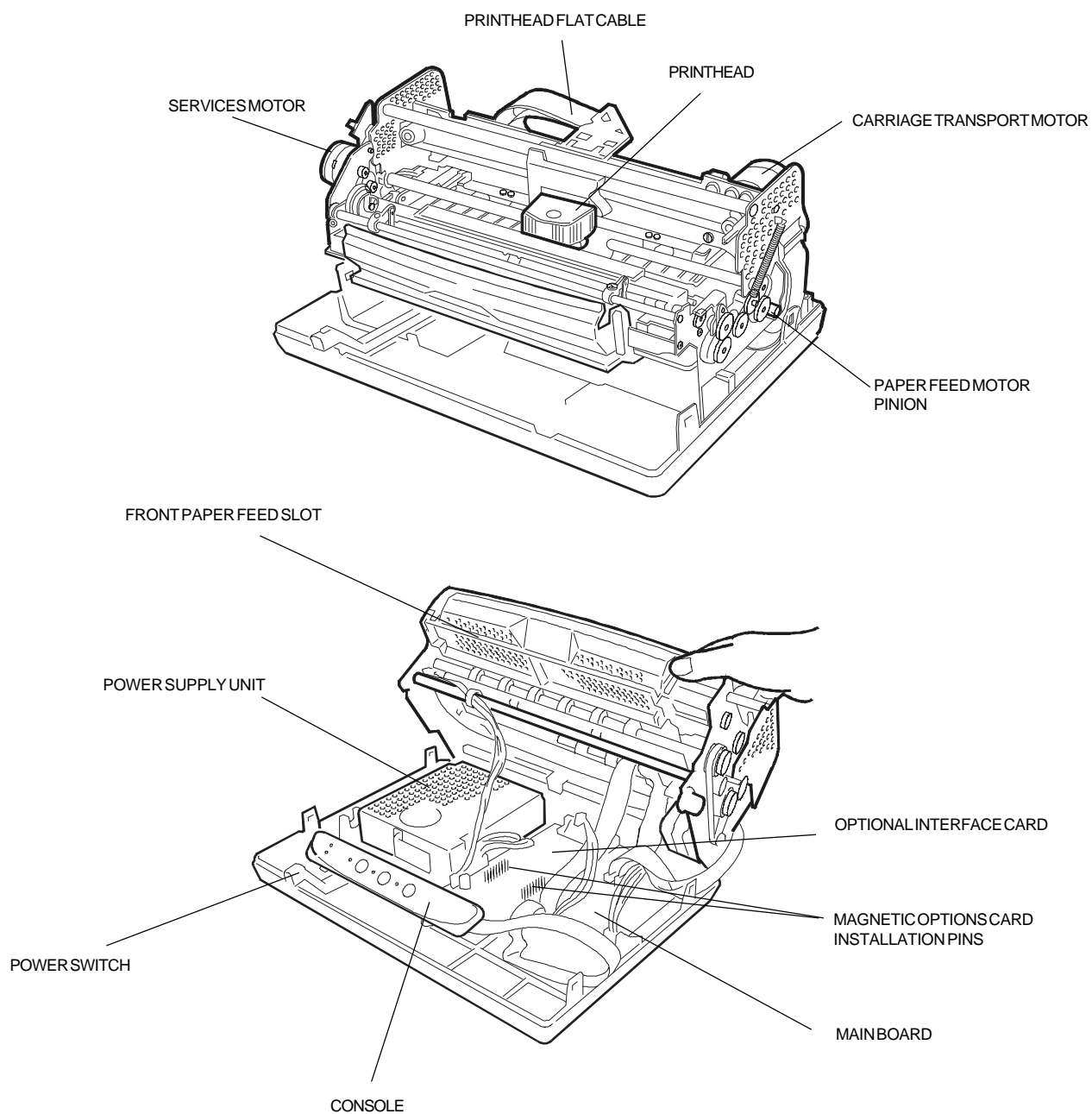
*Fig. 1-2 SNUG CART Ribbon Cartridge*

## 1.7 LOCATING THE PRINTER'S MAJOR COMPONENTS



*Fig. 1-3 Locating the Printer's Major Components*

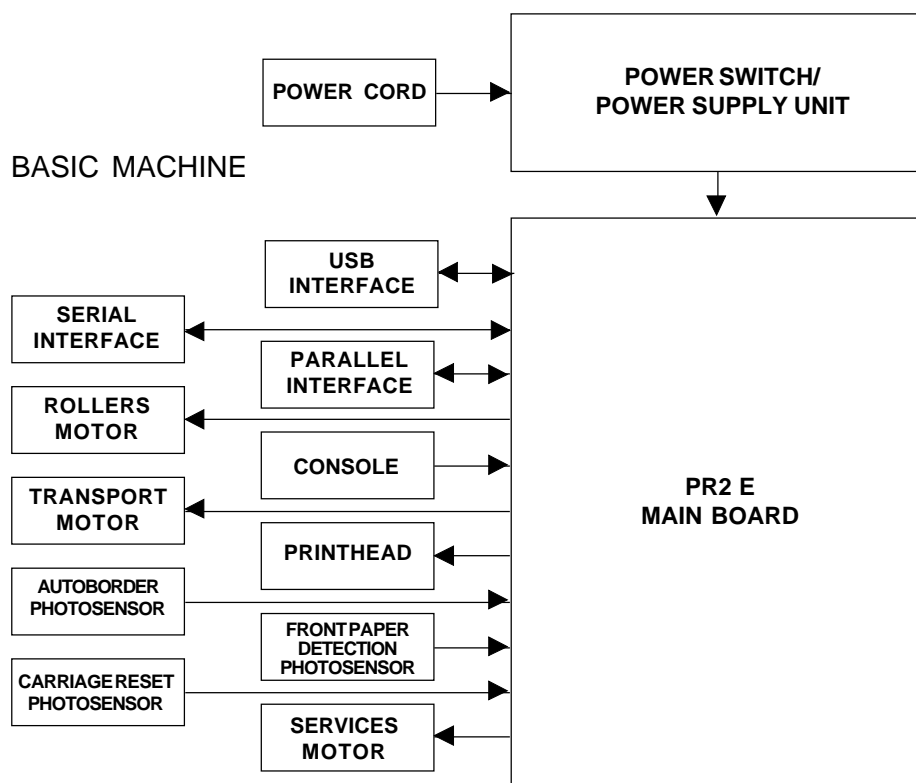
## 1.8 LOCATING THE PRINTER'S MAJOR INTERNAL COMPONENTS



*Fig. 1-4 Locating the Printer's Major Internal Components*

## 1.9 GENERAL BLOCK DIAGRAM

### 1.9.1 BASIC MACHINE



## **1.10 FIRMWARE AND CHARACTER GENERATORS**

### **1.10.1 MACHINE FIRMWARE**

Separate from the character generator and character set, the printer management firmware is independently managed during the uploading operations so that all access to the character area for modification is rendered more flexible and immediate.

The printer's basic memory is provided by a 1 MB Flash EPROM. The management FW, the character generators and character sets reside in this memory and can be replaced on-line.

A second Flash EPROM (optional) of the same capacity and capable of hosting complex character sets and considerable macro and logo volumes, can be installed on the main board.

The machine firmware includes the following emulations:

- Olivetti environment: STD 12/14 controlled protocol with the PR2 E native environment, PR40+ and PR2845 emulation. IBM Proprinter II and Proprinter X24 industry-standard emulation.
- IBM environment: 9068 protocol emulation covering also the model 4722. IBM Proprinter II and Proprinter X24 industry-standard emulation.
- Wincor-Nixdorf environment: SNI 4915 protocol emulation covering also the models 4905. EPSON LQ 2550 industry-standard emulation.

### 1.10.2 CHARACTER SETS

Compatibility at system level for each character set is extended to the environments listed below:

ENVIRONMENT	CHARACTER SETS
PC/DOS	CP SET, CODE PAGE
WINDOWS 2.X, 3.0; OS/2; UNIX	ISO 8859/X
WINDOWS 3.1	CP SET
OLIVETTI	STD 15

Each emulation in the machine has one or more associated character sets. The character sets that are available with each emulation are listed in the following table:

EMULATION	CHARACTER SETS
OLIVETTI	CP SET, STD 15 Olivetti, ISO
IBM	CP SET, ISO

### 1.10.3 PRINT MODES AND CHARACTER FONTS

The following table indicates the characteristics of the different print modes:

	10 cpi	12 cpi	15 cpi
- H.S.D. (High Speed Draft)	350 cps	314 cps	327 cps
- DRAFT	260 cps	260 cps	260 cps
- N.L.Q. (Near Letter Quality)	130 cps	130 cps	130 cps
- L.Q. (Letter Quality)	86 cps	104 cps	131 cps

The reference standards for the optical characters are the following:

Font	Code Standard	Std. Dimensions/Shape	Print Specifications
OCR A	EUROBANKING	ISO 1073/1	ISO 1831
OCR B	EUROBANKING	ISO 1073/2	ISO 1831

Relationship between write cycles and emulation environment:

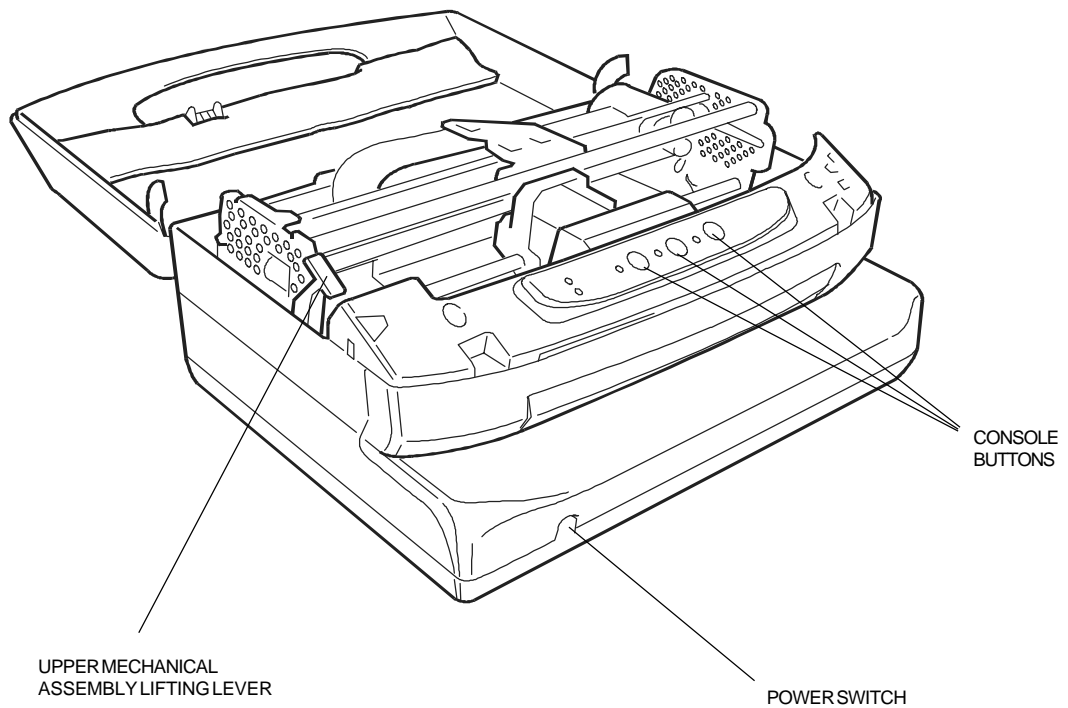
<b>Emulation</b>	<b>Print Styles</b>	<b>Selection</b>
<b>PR50/PR2845</b>	HSD, DRAFT, NLQ1, NLQ2, LQ2, OCRA, OCRB	FROM SET-UP
	DRAFT, NLQ1	FROM THE LINE
<b>PR50/PR40+</b>	HSD, DRAFT, NLQ1, NLQ2, LQ2, OCRA, OCRB	FROM SET-UP
	DRAFT, NLQ1, OCRA, OCRB	FROM THE LINE
<b>PR2 E</b>	HSD, DRAFT, NLQ1, NLQ2, LQ2, OCRA, OCRB	FROM SET-UP
	HSD, DRAFT, NLQ1, NLQ2, LQ2, OCRA, OCRB, ITALICO DRAFT ITALICO NLQ1, ITALICO NLQ2, ITALICO LQ2	FROM THE LINE
<b>IBM PP II/X24</b>	HSD, DRAFT, NLQ1, NLQ2, LQ2	FROM SET-UP
	DRAFT, NLQ1	FROM THE LINE



## 2. OPERATING COMMANDS

The machine's operating commands are the following:

- power switch
- console buttons
- upper mechanical assembly lifting lever.



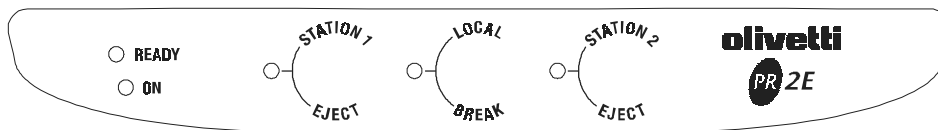
*Fig. 2-1 Operating Commands*

## 2.1 POWER SWITCH

The printer is equipped with a two-pole power switch. The switch on/off command is provided by means of a rod that crosses the printer longitudinally.

## 2.2 CONSOLE

The printer console has five LEDs and three buttons.



*Fig. 2-2 Console*

The console is also equipped with a circuit breaker (Dry-reed) that informs the board logics when the printer's top cover is opened.

During the machine set-up (section 4.3) or adjustment (section 4.4) phases, the buttons perform different functions according to the procedures in which they are used.

## 2.2.1 FUNCTIONS OF THE CONSOLE BUTTONS

The buttons on the console perform the following functions:

**STATION 1:** Reserves operator 1 (Olivetti STD 12/14) or assigns the printer to operator 1 (\*)

**STATION 2:** Reserves operator 2 (Olivetti STD 12/14) or assigns the printer to operator 2 (\*)

**LOCAL/BREAK:** Toggles the printer between the on-line and off-line states

**EJECT (ST. 1):** Ejects the paper of operator 1 or ejects the paper present (\*)

**EJECT (ST. 2):** Ejects the paper of operator 2 (\*)

(\*) According to the selected emulation.

You can access the different machine states by powering on or resetting the printer while holding down one or more buttons. The buttons assume different functions depending on whether the printer top cover is opened or when the printer is powered on or reset while holding down determined console buttons.

The following table provides the meaning of the console buttons in both cases.

Local	ST. 1	ST. 2	Cover open	MACHINE STATE
		X		Print test
	X	X		Set-up
	X		X	Clear paper jam procedure
X	X		X	Printer set for the on-line updating of the firmware (onto Flash-EPROM)
X	X	X	X	Access to the following procedures: a) Photosensor adjustment b) User TOF setting c) Left-hand margin setting d) Paper or savings book length measurement e) Print alignment adjustment f) Photosensor adjustment printout
X			X	Disable cover open signal

## 2.2.2 MEANING OF THE CONSOLE LEDS

When on, the LEDs inform of the following machine states:

<b>ON:</b>	Machine powered on
<b>READY:</b>	Printer on-line/in receive mode or document present (*)
<b>LOCAL:</b>	Machine in LOCAL (off-line)
<b>STATION 1:</b>	<i>When on:</i> Waiting for a document from operator 1 (Oliveti STD 12/14) or machine assigned to operator 1 or document present (*) <i>When flashing:</i> Waiting for a document from operator 1 or data present in the buffer (*)
<b>STATION 2:</b>	<i>When on:</i> Waiting for a document from operator 2 (Oliveti STD 12/14) or machine assigned to operator 2 or document present (*) <i>When flashing:</i> Waiting for a document from operator 2

(\*) According to the selected emulation.

## 2.2.3 ERROR MESSAGES

The table on the next page shows the different LED configurations (with the exception of the ON LED which is always on) and their meaning.

The faults are classified as follows:

- (1) Fatal error. This error locks the machine and can only be cleared by powering off the printer and proceeding with all necessary repairs.
- (2) Operator-correctable error (paper jam) that can be cleared by removing the cause and then pressing the ST1 key with the cover open.

### 2.2.3.1 FAULT IDENTIFICATION CHART

FAULT \ LED	ON	READY	ST1	LOCAL	ST2
Power supply unit failure	OFF	OFF	OFF	OFF	OFF
On-board failure: - Eprom - ROM - Microprocessor	ON	OFF	OFF	OFF	OFF
Failure caused by: - Fuse - Driver - Motors	ON	ON	ON	ON	ON
Activation board failure	The motors are not working				

## **2.3 BUTTON AND LED FUNCTIONS IN THE IBM 9068 (4722) EMULATION**

This section describes the button functions and LED indications of the PR2 E printer when in the IBM 4722 emulation.

### **2.3.1 BUTTON FUNCTIONS**

The buttons have the following functions:

LOCAL/BREAK       Toggles the printer between the on-line and off-line states.

STATION 1/EJECT   Assigns the printer to operator 1. SW-monitored button.

STATION 2/EJECT   Assigns the printer to operator 2. SW-monitored button.

Pressing the STATION 2/EJECT button while powering on the printer prints the self-test.

### **2.3.2 LED INDICATIONS**

When on, the LEDs inform of the following machine states:

ON               Green LED, indicates that the machine is powered on.

READY           Yellow LED, indicates that the printer is on-line and that a document is present.

LOCAL           Yellow LED, indicates that the printer is off-line.

STATION 1       Yellow LED, indicates that the printer is assigned to operator 1.

STATION 2       Yellow LED, indicates that the printer is assigned to operator 2.

Since the buttons and LEDs are managed via SW, their functions and usage may vary according to the application SW being used.

## 2.4 BUTTON AND LED FUNCTIONS IN THE SNI 4915 (4904) EMULATION

This section describes the button functions and LED indications of the PR2 E printer when in the SNI 4915 (4904) emulation.

### 2.4.1 BUTTON FUNCTIONS

The buttons have the following functions:

- |                 |  |
|-----------------|--|
| LOCAL/BREAK     | Toggles the printer between the on-line and off-line states              |
| STATION 1/EJECT | Assigns the printer to operator 1 and ejects the document of operator 1. |
| STATION 2/EJECT | Assigns the printer to operator 2 and ejects the document of operator 2. |

Pressing the STATION 2/EJECT button while powering on the printer prints the self-test.

### 2.4.2 LED INDICATIONS

When on, the LEDs inform of the following machine states:

- |           |   |
|-----------|---|
| ON        | Green LED, indicates that the machine is powered on.  |
| READY     | Yellow LED, indicates that the printer is on-line.  |
| LOCAL     | Yellow LED, indicates that the printer is off-line.   |
| STATION 1 | Yellow LED; when flashing indicates that the printer is waiting for a document from operator 1, when on indicates that a document is present. |
| STATION 2 | Yellow LED; when flashing indicates that the printer is waiting for a document from operator 2, when on indicates that a document is present. |

A specific console different than the one used on the standard product is available for this PR2 E version.

## **2.5 BUTTON AND LED FUNCTIONS IN THE IBM PROPRINTER II/X24 - EPSON LQ 2550 EMULATION**

This section describes the button functions and LED indications of the PR2 E printer when in the IBM Proprinter II/X24, EPSON LQ 2550 emulation.

### **2.5.1 BUTTON FUNCTIONS**

The buttons have the following functions:

LOCAL/BREAK       Toggles the printer between the on-line and off-line states

STATION 1/EJECT   Ejects the document present.

STATION 2/EJECT   Not used.

Pressing the STATION 2/EJECT button while powering on the printer prints the self-test.

### **2.5.2 LED INDICATIONS**

When on, the LEDs inform of the following machine states:

ON               Green LED, indicates that the machine is powered on.

READY           Yellow LED, indicates that the printer is on-line.

LOCAL           Yellow LED, indicates that the printer is off-line.

STATION 1   Yellow LED; when flashing indicates that data are present in the buffer, when on indicates that a document is present.

STATION 2   No indication.

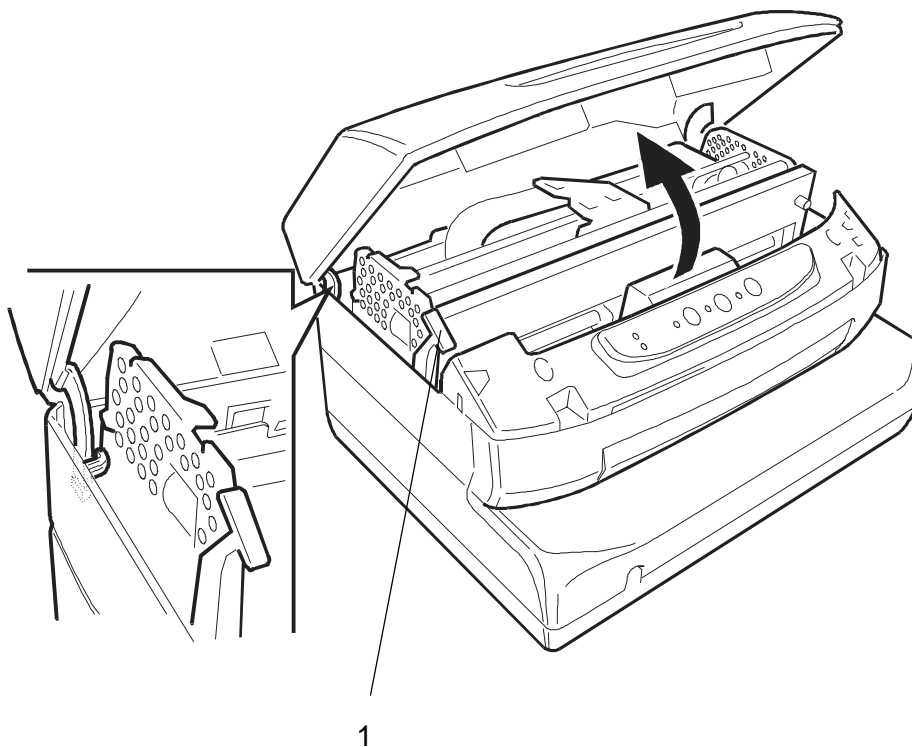
A specific console different than the one used on the standard product is available for this PR2 E version.



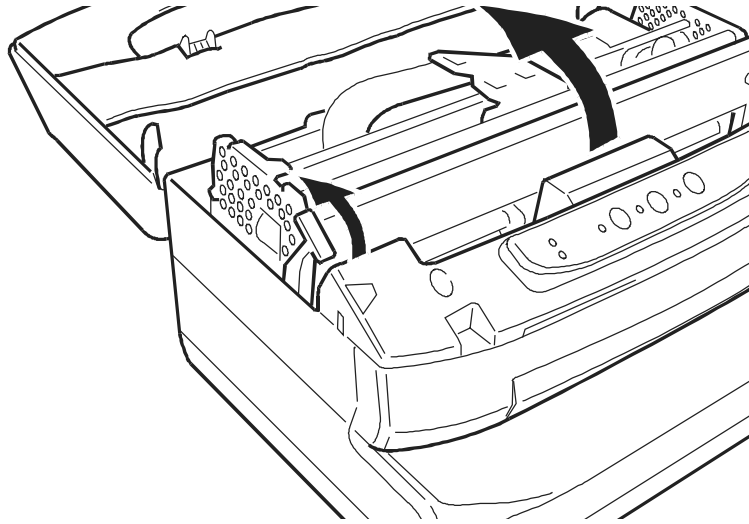
## 2.6 UPPER MECHANICAL ASSEMBLY LIFTING LEVER

The upper mechanical assembly lifting lever (1) is located on the left-hand side of the printer and is used to lift the upper part of the mechanical assembly so that you can access the internal paper path so that paper jams can be cleared without needing to power off the printer.

To access this lever, lift the printer cover about 45 degrees until it stops.

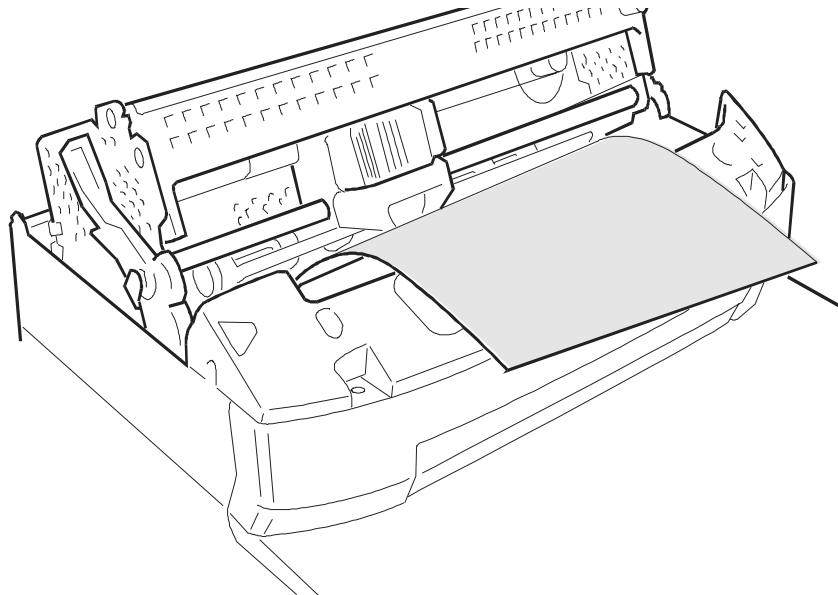


*Fig. 2-3 Opening the Cover*



*Fig. 2-4 Upper Mechanical Assembly Lifting Lever*

Pushing this lever as far as it goes lifts the upper part of the mechanical assembly thus granting you access to the paper path.



*Fig. 2-5 Removing a Jammed Sheet of Paper*

## **3. INSTALLATION**

### **3.1 GENERAL INSTALLATION PRECAUTIONS**

To ensure optimum printer functionality and to avoid making service calls for problems that are not directly caused by the product itself, bear in mind the information provided in the following sections.

#### **3.1.1 ELECTRICAL POWER SUPPLY**

Make sure that the electrical wall outlet to which the printer is connected has a valid ground and that it is able to supply the power needed by the machine. A wall outlet without ground can cause functional problems and can be a safety hazard.

Do not plug the printer to electrical wall outlets that are already being used by equipment that could cause electrical noise and excessive voltage fluctuations (fans and air conditioners, large photocopiers, lift motors, TV radio transmitters and signal generators, high frequency safety devices, and so on).

Common office equipment (calculating machines, typewriters, small fotocopiers, terminals and personal computers) can share the same outlet as long as they do not cause excessive electrical noise.

#### **3.1.2 ENVIRONMENTAL CONDITIONS**

The environmental conditions in which the product can remain for an indefinite period of time are indicated by the AB quality objectives referring to a normal climatized office environment (environmental temperture of 15/35 °C, relative humidity of 15/85%).

During machine storage and operation, make sure that condensation does not form as the result of extreme environmental variations. Dust, dirt and smoke can cause the parts in motion to wear excessively, short circuits (in the presence of a high degree of humidity) and read/write errors during operation. High temperatures and low humidity can cause problems due to static electricity.

#### **3.1.3 LOCATING THE MACHINE**

The printer must be installed on a flat, vibration-free surface.

Do not position the machine near air conditioning systems, heat sources or in direct sunlight.

Do not obstruct the printer's ventilation slots.

If the printer is installed in a cabinet, make sure that it has good ventilation so as to avoid overheating.

Install the printer in a position so that paper jams can be cleared easily.

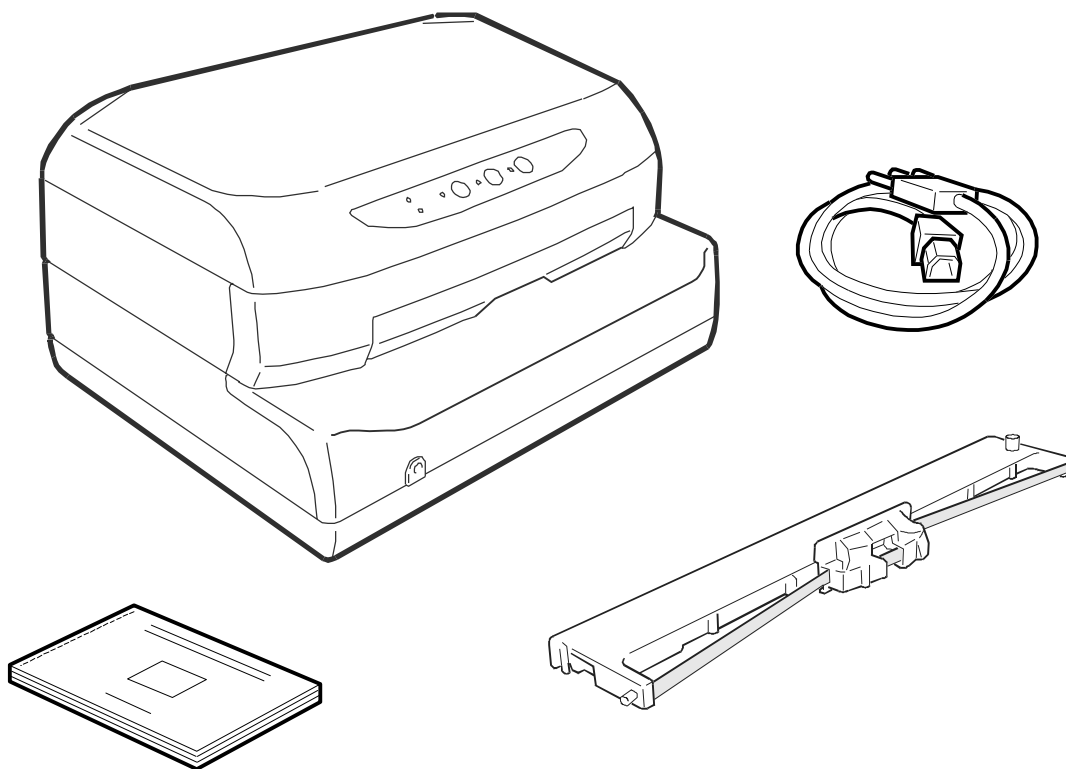
## 3.2 UNPACKING AND INSTALLING THE MACHINE

### 3.2.1 UNPACKING THE MACHINE

#### *Checking the box contents*

The following items should be contained in the packaging:

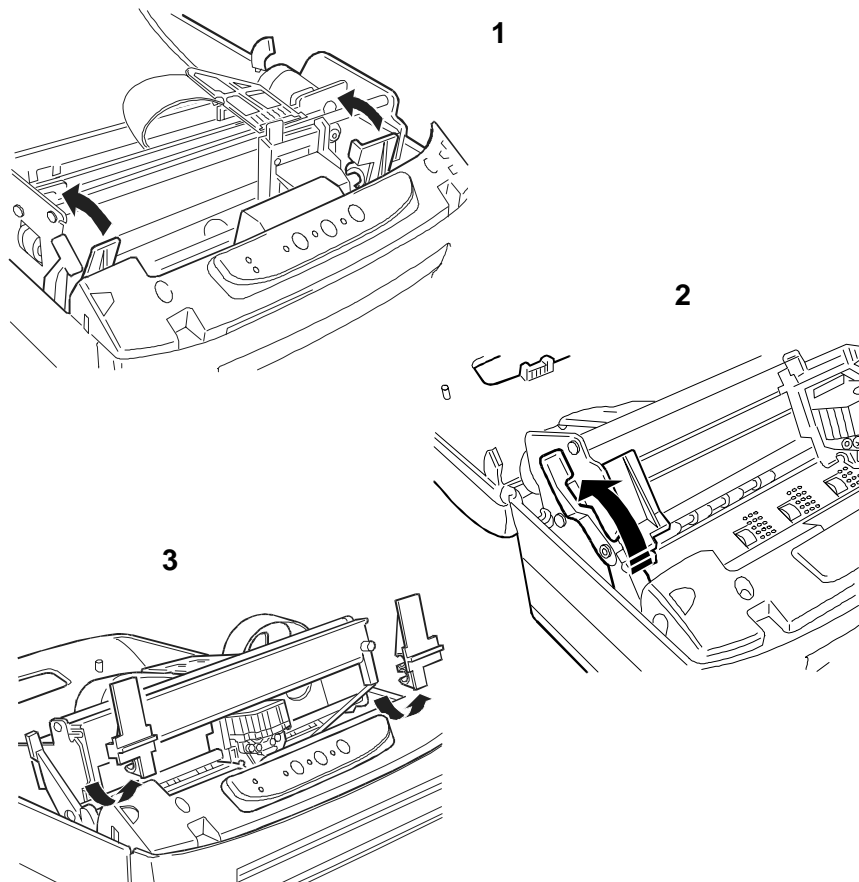
- PR2 E printer
- Power cord
- Operator Manual
- Ribbon cartridge
- Magnetic head cleaning card (not shown in the figure below) for models equipped with this option.



*Fig. 3-1 Package Contents*

### ***Unpacking and Setting-Up the Printer***

- Remove the machine from its protective bag.
- Open the printer's top cover completely, forcing it to a horizontal position.
- Push forward the two red plastic retainers that lock the print carriage (illustration 1 in the following figure).
- Lift the upper part of the mechanical assembly (illustration 2 in the following figure) and then remove the two retainers (illustration 3 in the following figure).



*Fig. 3-2 Removing the Transportation Retainers*

- Quickly check that the printer was not damaged during transportation.
- Install the ribbon cartridge (section 3.7.5)
- Close the machine.

### **3.2.2 INSTALLING THE MACHINE**

Position the machine for operation, making sure that it complies with the information provided in section 3.1.

Make sure that the voltage rating indicated on the electrical data plate corresponds to the local mains. Plug the power cord into the electrical wall outlet and then power on the printer.

Make sure that the printer powers on by checking the mechanical reset and the lighting of the ON LED on the console.

If other LEDs other than the ON LED remain lit, refer to section 2.2.3 "Error Messages".

### **3.3 OFF-LINE TESTS**

A print test can be run to make sure that the printer works correctly before actually connecting it to the system.

#### **3.3.1 STARTING AND STOPPING THE PRINT TEST**

Proceed as follows to activate the print test:

- Power off the printer.
- Power on the printer while pressing the STATION 2/EJECT button on the console.
- After printer initialization, insert an A4 sheet of paper into the front feed slot until triggering the paper alignment photosensor.

The machine will automatically feed the sheet of paper and start printing the test. The sheet of paper is automatically expelled at the end of the test. To repeat the test simply insert a new sheet of paper.

To stop the print test, power off the machine.

### 3.3.2 PRINT TEST CONTENTS

The print test provides the following information:

- The release and version of the firmware and character generators installed
- A graphical representation of 24-needle functionality (Needles test)
- The configuration of the printer
- The parameters defined for the IBM-PP and Olivetti emulations.

To stop the print test, power off the printer.

The following pages provide examples (Fig. 3-3 and Fig. 3-4) of the information provided by the tests. The content of the test depends on the FW release installed on the printer.

Needles test:

										1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	0	E
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	D	V	

CONFIG.

DRAFT SPEED: NORMAL  
 LQ TYPE: NLQ1  
 PAPER WIDTH: FIRST LINE  
 BUZZER: Y  
 INTERFACE: DUAL  
 RS1 EMULATION: OLIVETTI  
 BAUD RATE: 9600  
 BIT/CHAR: 8  
 PARITY: NONE  
 STOP BIT: 1  
 DSR: Y  
 DCD: Y  
 CX EMULATION: IBM  
 STROBE ACTIVE: Y  
 PAP.EDGE DETEC.: N  
 SPECIAL FORMS: N

IBM-PP  
 EMULATION: P.P.II  
 PASSBOOK: Y  
 BINDING: VERTICAL  
 SIDE: L  
 CHAR SET: PC  
 PC CHAR SET: 437 (INT)  
 PC TABLE: TABLE 2  
 CHAR DEFINITION: DRAFT  
 CPI: 10  
 LF=LF+CR: N  
 CR=CR+LF: N  
 ZERO SLASH: N  
 LINE LENGHT: 80  
 FORM LENGTH: 12  
 BOF IBM-PP LIKE: Y  
 TOF IBM-PP LIKE: Y

OLIVETTI  
 EMULATION: PR2E  
 PASSBOOK: Y  
 BINDING: VERTICAL  
 SIDE: L  
 CHAR SET: OLIVETTI  
 OLI. CHAR SET: ST15INT  
 CHAR DEFINITION: DRAFT  
 CPI: 10  
 COMPRESSED: 16.6  
 VERTICAL RESOL.: 1/240inch  
 LF=LF+CR: N  
 LINE LENGHT: 90  
 REPLY SYNCRON.: N  
 STATUS REQUEST: NO WAIT

Fig. 3-3 Print Test Example - PR2 E Basic Version



## Needles test:

										1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	0	E
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	D	V		

## CONFIG.

DRAFT SPEED: NORMAL  
 LQ TYPE: NLQ1  
 PAPER WIDTH: FIRST LINE  
 BUZZER: Y  
 INTERFACE: DUAL  
 RS1 EMULATION: OLIVETTI  
 BAUD RATE: 9600  
 BIT/CHAR: 8  
 PARITY: NONE  
 STOP BIT: 1  
 DSR: Y  
 DCD: Y  
 CX EMULATION: IBM  
 STROBE ACTIVE: N  
 PAP.EDGE DETEC.: N  
 SPECIAL FORMS: N

IBM-PP  
 EMULATION: P.P.II  
 PASSBOOK: N  
 SIDE: L  
 CHAR SET: PC  
 PC CHAR SET: 437 (INT)  
 PC TABLE: TABLE 2  
 CHAR DEFINITION: DRAFT  
 CPI: 10  
 LF+CR: N  
 CR+LF: N  
 ZERO SLASH: N  
 LINE LENGHT: 80  
 FORM LENGTH: 12  
 BOF IBM-PP LIKE: Y  
 TOF IBM-PP LIKE: Y

OLIVETTI  
 EMULATION: PR2E  
 PASSBOOK: N  
 SIDE: L  
 CHAR SET: IBM/PC  
 IBM CHAR SET: ISO  
 ISO SET: ISO 8859/5  
 CHAR DEFINITION: DRAFT  
 CPI: 10  
 COMPRESSED: 16.6  
 VERTICAL RESOL.: 1/216inch  
 LF+CR: N  
 LINE LENGHT: 90  
 REPLY SYNCRON.: N  
 STATUS REQUEST: NO WAIT

OPTION HOR.MSRW  
 STANDARD: IBM 3604  
 END-SENTINEL: C  
 DISPLACEMENT: STANDARD  
 DUPLICATE: N  
 DOUBLE FIELD: Y  
 RETRY: 3  
 STRIPE HANDLING: NORMAL

Fig. 3-4 Print Test Example - PR2 E + Horizontal Magnetic Device

### 3.4 CONNECTION TO THE SYSTEM

In its basic configuration, the printer is equipped with an on-board standard RS232 C interface and a slot for the installation in field of an optional interface card that connects to the specific connector on the main board. One of the following two optional interface cards can be installed in the slot on the rear of the printer:

- RS 232C serial interface + USB interface card
- Centronics parallel interface card

In its dual-port configuration, and therefore configured with the standard serial interface and serial interface + USB interface card or with the standard serial interface and parallel interface card, the printer can operate in run-time mode on the available interfaces so as to satisfy specific application requirements.

#### 3.4.1 RS 232C SERIAL INTERFACE (STANDARD)

Attach the serial cable to the interface located on the rear of the printer.

Via Set-up (Section 4.3.2) program the following interface parameters:  
BAUD RATE; BIT/CHAR; PARITY; STOP BIT; DSR and DCD.

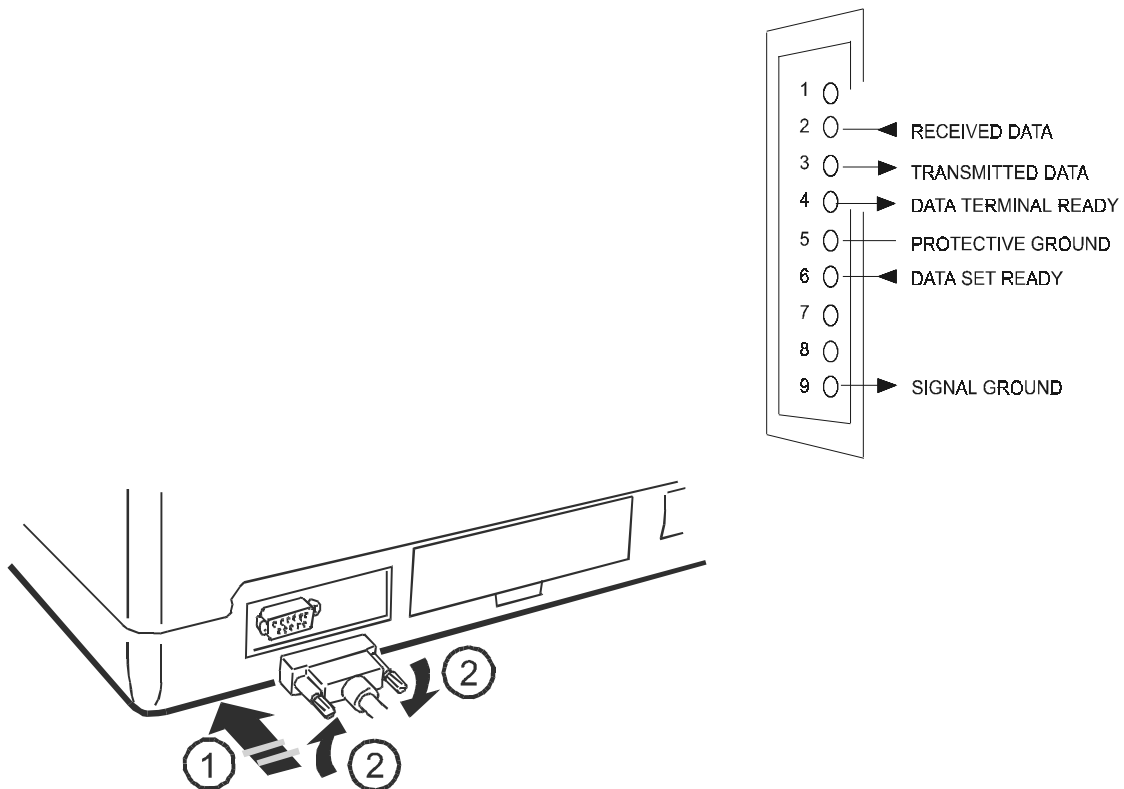


Fig. 3-5 Standard RS232 C Serial Interface

### 3.4.2 OPTIONAL SERIAL INTERFACE + USB INTERFACE CARD

The optional serial interface + Universal Serial Bus (USB) interface card hosts both interfaces and is installed in the specific slot alongside the standard first serial interface on the rear of the printer. This interface card is shown in the following figure.

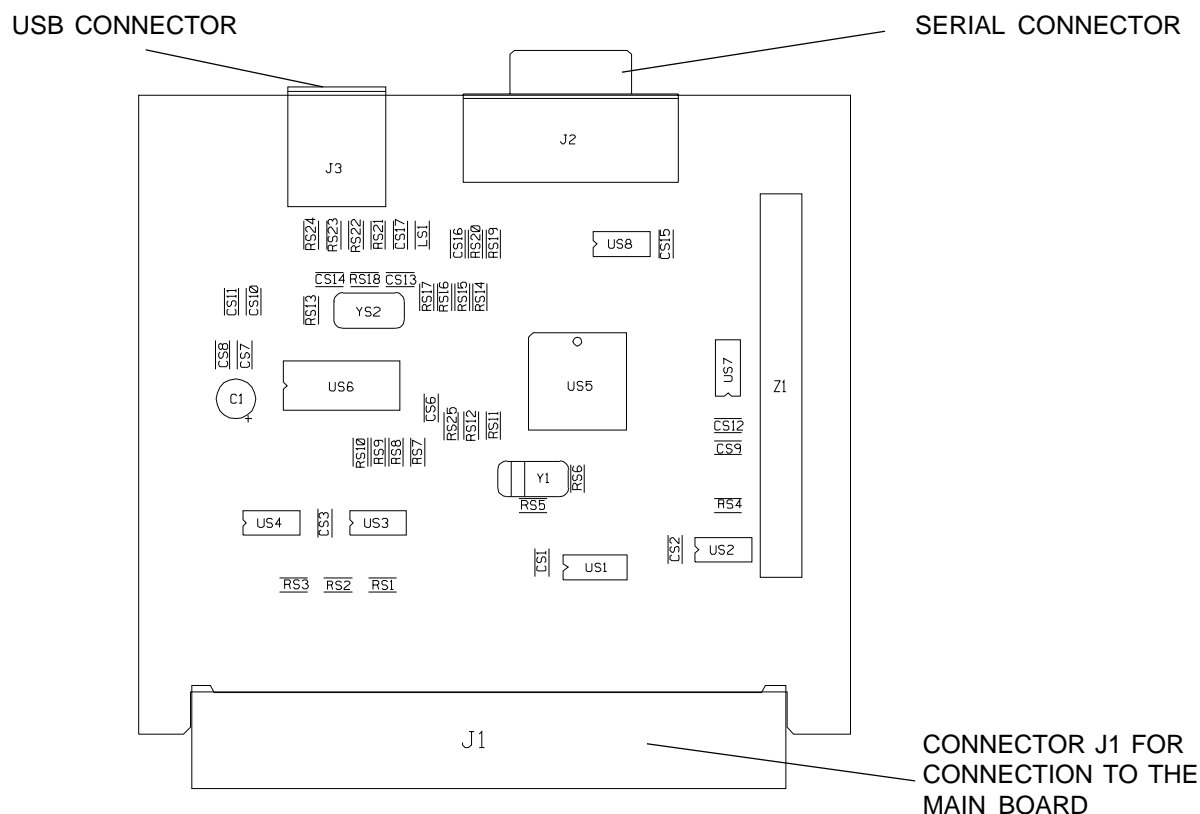


Fig. 3-6 Serial Interface + USB Interface Card

This serial interface has the same characteristics as the main board serial interface, while the USB interface complies with the Universal Serial Bus Specification - Revision 1.1 reference standard and has a transfer rate of  $\geq 200$  kBps.

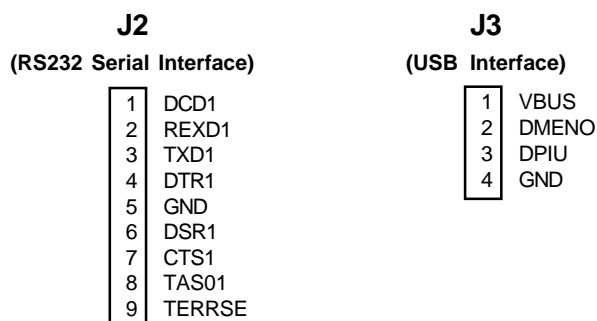
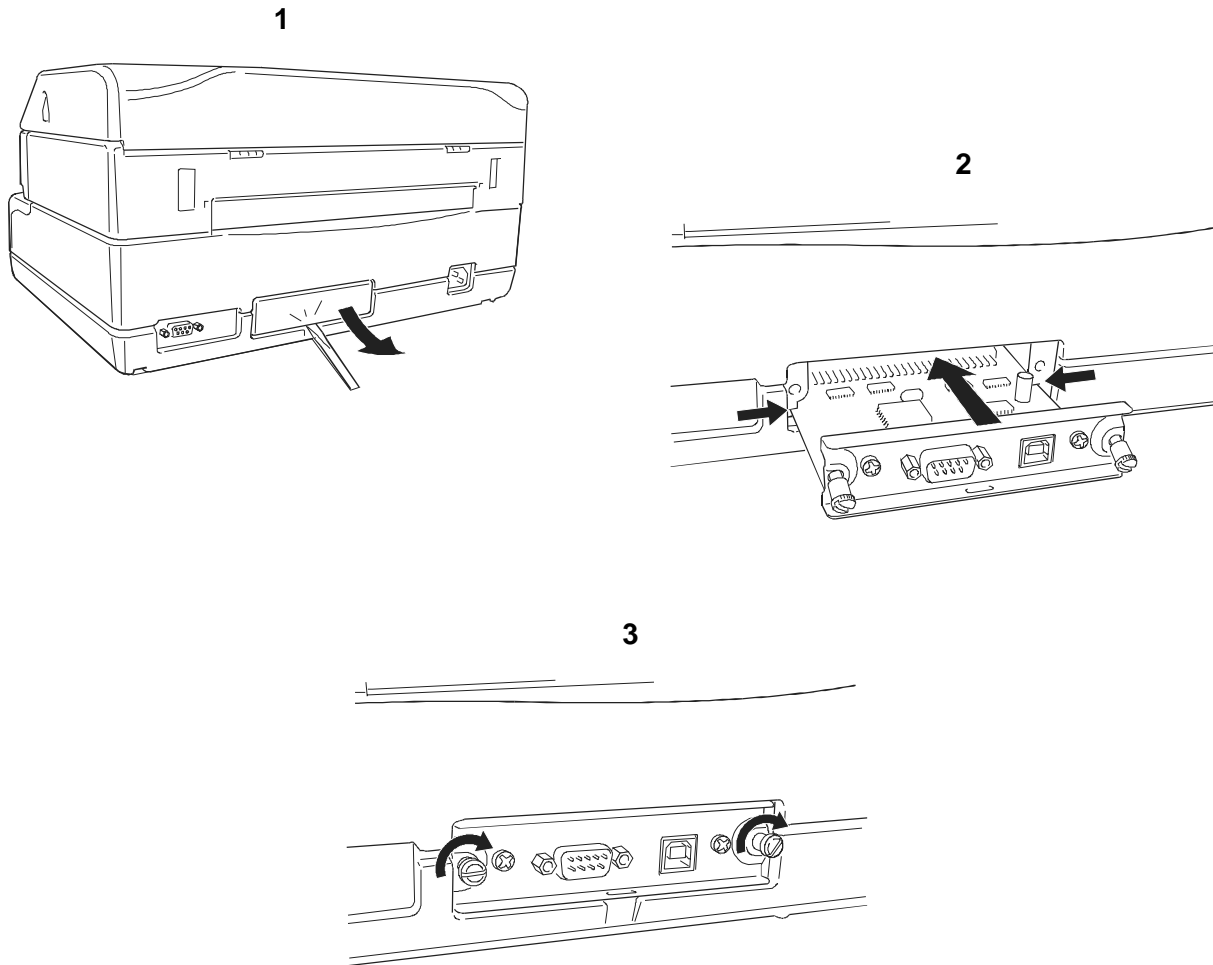


Fig. 3-7 USB Interface Pin-Out

Proceed as follows to install this optional card:

- Power off the printer.
- Using a screwdriver, break off the slot cover of the optional serial interface on the rear of the printer.
- Insert the interface card in the slot and slide it along the guideways until it plugs into the related connector on the main board. Push firmly to ensure proper connection.
- Tighten the card's two side screws to secure it in place.



*Fig. 3-8 Installing the Serial Interface + USB Interface Card*

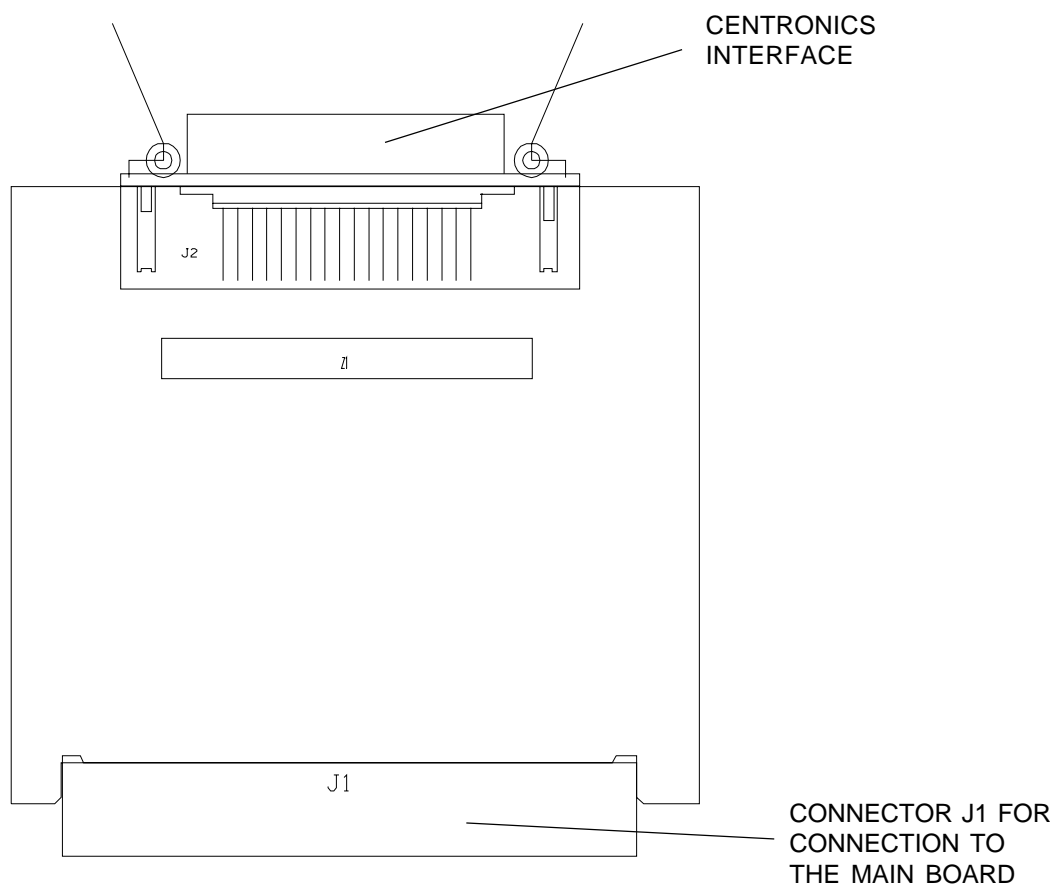
Once the optional serial interface + USB interface card is installed, only the two serial interfaces are operational simultaneously. In this configuration, with an empty buffer and in an out of paper condition, the printer polls the two ports to see which one will be assigned. When a signal is received by any one of the two interfaces, the printer switches to the receiving interface and maintains this condition until the end of the print job. The assignment of the interfaces is mutually exclusive.

In addition to the active emulation, the two interfaces have the same parameter settings. The active emulation can be changed by an on-line command.

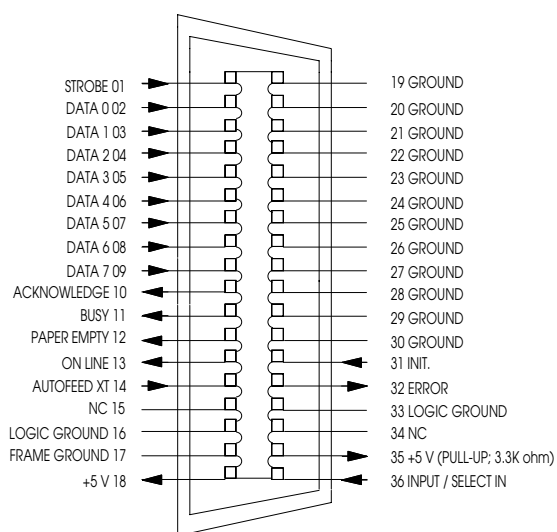
### 3.4.3 OPTIONAL IEEE 1284 PARALLEL INTERFACE CARD

The optional parallel interface card hosts a 36-pin Centronics parallel interface. It is installed in the specific slot alongside the first serial interface on the rear of the printer. It is suggested to use an interface cable up to 1.5 meters long. The ECP data exchange protocol is used.

This card is shown in the following figure.



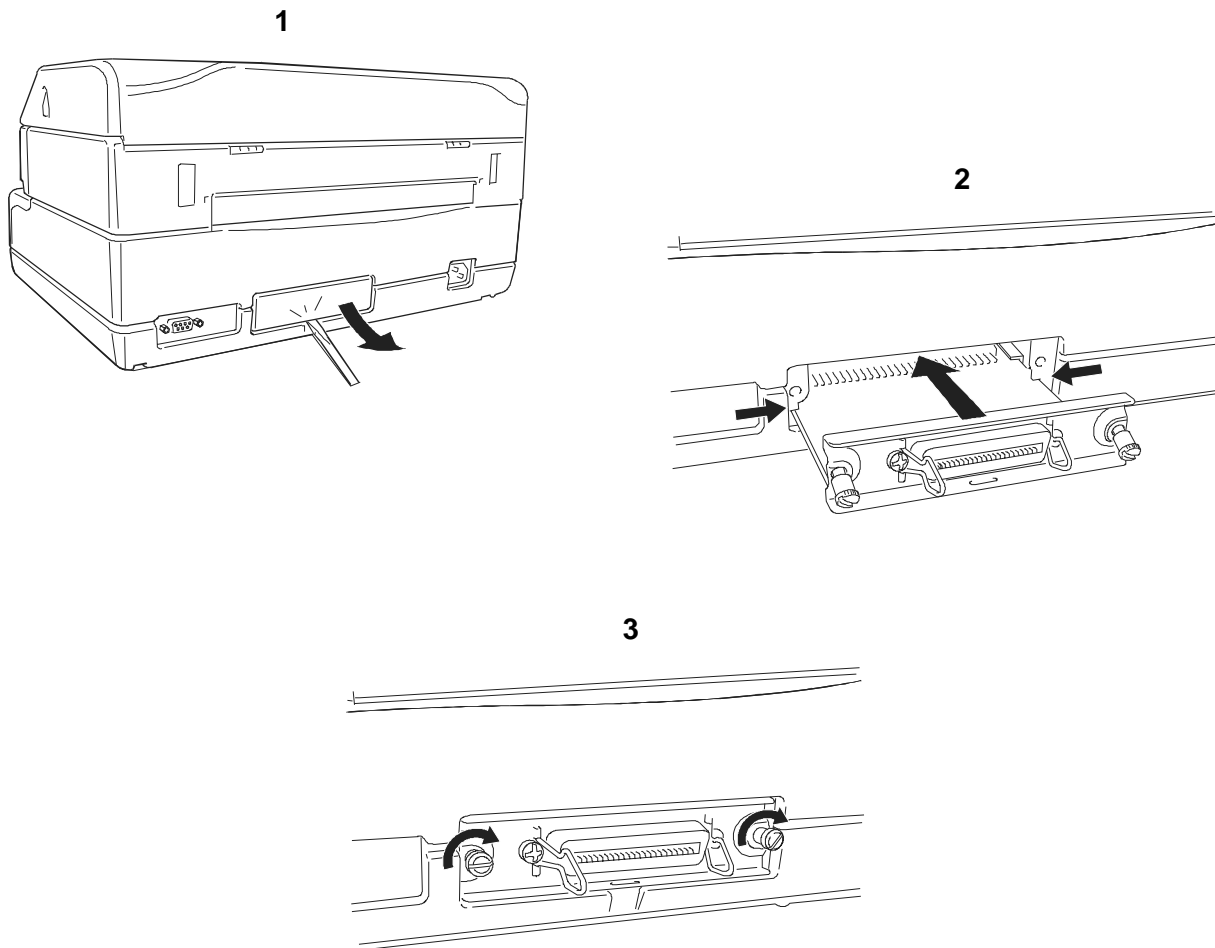
*Fig. 3-9 Parallel Interface Card*



*Fig. 3-10 Parallel Interface Pin-Out*

Proceed as follows to install this optional card:

- Power off the printer.
- Using a screwdriver, break off the slot cover of the optional serial interface on the rear of the printer.
- Insert the interface card in the slot and slide it along the guideways until it plugs into the related connector on the main board. Push firmly to ensure proper connection.
- Tighten the card's two side screws to secure it in place.



*Fig. 3-11 Installing the Parallel Interface Card*

In a printer dual-port configuration consisting of the standard serial interface + parallel interface, in an empty buffer and out of paper condition the printer polls the two ports to see which one will be assigned. When a signal is received by any one of the two interfaces, the printer switches to the receiving interface and maintains this condition until the end of the print job. Dual-port functionality is configured during printer set-up; in particular, active emulation can be set on each of the two interfaces and can be changed in run-time mode by means of a specific command.

### 3.5 FINAL TESTING

After connecting the printer to the system, test its interface parameters. The PR2 E has a resident run-in test which is useful to check the outcome of the ordinary maintenance intervention. Proceed as follows to perform this test:

- Power on the PR2 E by pressing the STATION 2/EJECT button with the printer cover open. Upon completion of the reset routine, close the printer cover and insert an A4 sheet of paper (for the printing of the self-test). When the sheet of paper is expelled, press the LOCAL/BREAK and STATION 2/EJECT buttons simultaneously (RUN-IN test). The test lasts about 45' and vertical bars are printed. In this test mode, the efficiency of the machine's mechanics and electronics is tested just like at the factory. Power off the printer to exit from the run-in test mode.

### 3.6 INFORMATION FOR THE OPERATOR

After installation, the field engineer has the responsibility of informing the operator on how to use the printer, how to replace the cartridge and how to clear paper jams. It is suggested that a practical demonstration be given for the following operations:

- Using the console, interpreting the error messages and unlocking the machine whenever necessary.
- Inserting a savings book and sheets of paper into the front insertion slot, stressing the importance of avoiding the use of crumpled or torn paper or savings books with jutting spines. Show how to insert the sheet of paper (automatic alignment) and the savings book (manual alignment).
- Replacing the ribbon cartridge.
- Removing a jammed document from the printer by using the lever for lifting the upper mechanical assembly.
- Inserting a check or tab in the optional check reader, making sure to avoid using documents that are torn, wrinkled, folded, stapled or held together with paper clips.

Stress the importance of good internal ventilation and therefore the need to keep the printer vents unobstructed (from forms or other types of paper).

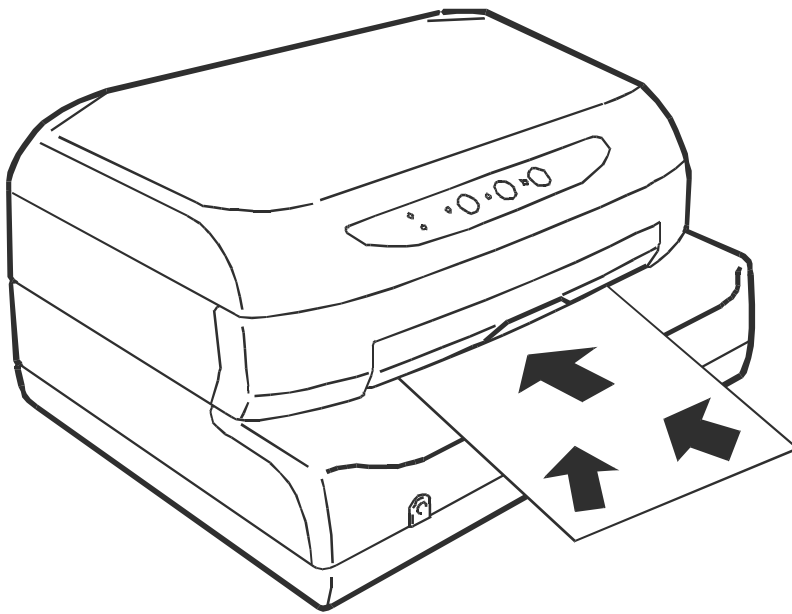
Make it clear to the operator that observing these simple precautions ensures good printer operation in time. If failures should arise, however, the operator should promptly call the field engineering service.

## 3.7 OPERATING PROCEDURES

### 3.7.1 INSERTING A DOCUMENT WITH AUTOMATIC ALIGNMENT

The front shelf on the case helps to insert the document in the printer.

- With the printer powered on, place the document at the center of the front slot and then insert it into the feed slot.
- Release the document as soon as the automatic alignment system is activated.



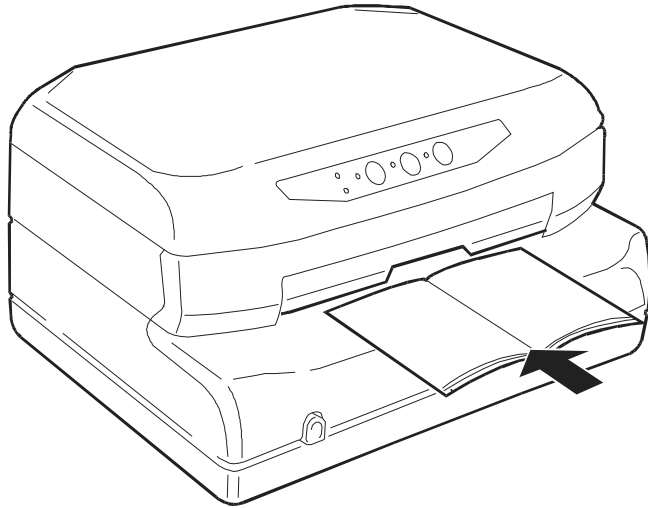
*Fig. 3-12 Automatic Document Insertion*



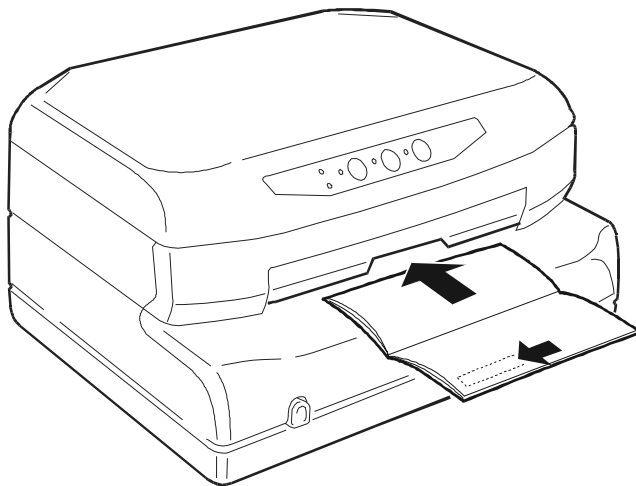
### 3.7.2 INSERTING A SAVINGS BOOK

Before inserting a savings book, open it and press it along its spine so that it remains completely open horizontally. Make sure that pages of the book are not folded or ripped so as to prevent a poor print quality and errors during book insertion.

Place the open savings book on the front shelf with the magnetic stripe on the bottom.



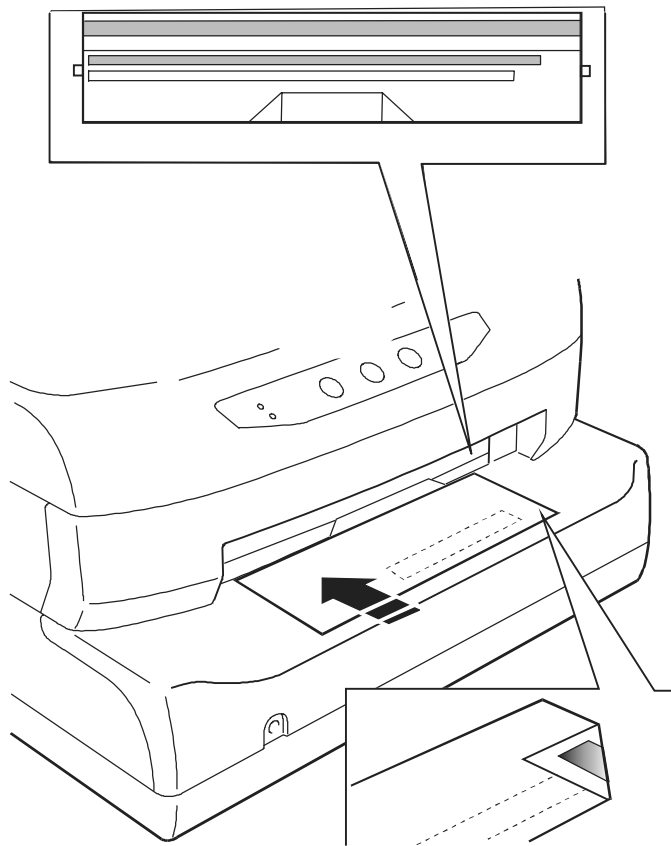
*Fig. 3-13 Manual Insertion of a Savings Book*



*Fig. 3-14 Manual Insertion of a Savings Book with Magnetic Stripe*

### 3.7.3 INSERTING A CHECK FOR HORIZONTAL MAGNETIC DEVICE/MICR READ OPERATIONS

On the front of the machine cover there is a reference stripe to be used when inserting checks.



*Fig. 3-15 References for the Insertion of Checks*

### 3.7.4 EXPULSION OF PROCESSED DOCUMENTS

The processed documents can be expelled from the printer, according to the application program, in the following ways:

- Returning back to where the documents were manually inserted (paper feed slot)
- From the printer's rear slot, starting from the front feed slot

If the documents that are expelled from the front feed slot:

- are less than 100 mm long, they will be released from the feed rollers
- are 100 mm long or longer, they will remain gripped by the last set of rollers to avoid that the document tails off the front shelf.

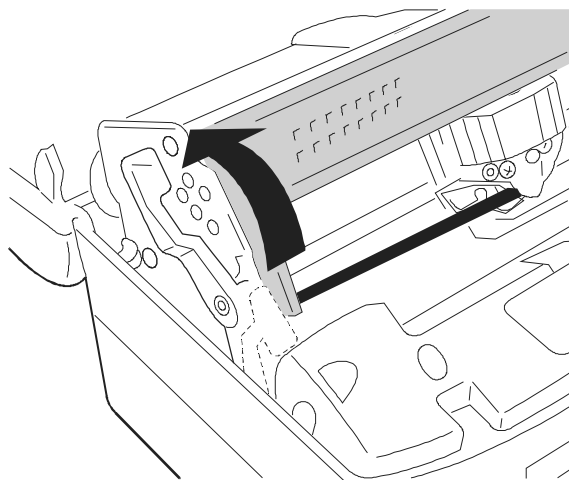
### 3.7.5 REPLACING THE RIBBON CARTRIDGE

The ribbon cartridge must be changed when printing is incomplete or faded, or when there are frequent optical read errors on the printed documents. This procedure is to be performed with the machine powered off; if necessary, however, it can even be performed with the machine powered off.

#### 3.7.5.1 REPLACING THE RIBBON CARTRIDGE WITH THE MACHINE POWERED OFF

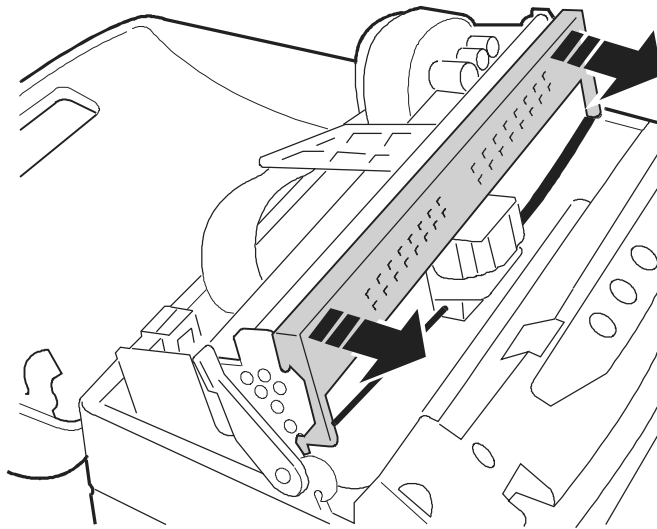
Proceed as follows to change the ribbon cartridge:

- Power off the machine.
- Open the printer top cover.
- Lift the upper mechanical assembly by pushing the appropriate lever.



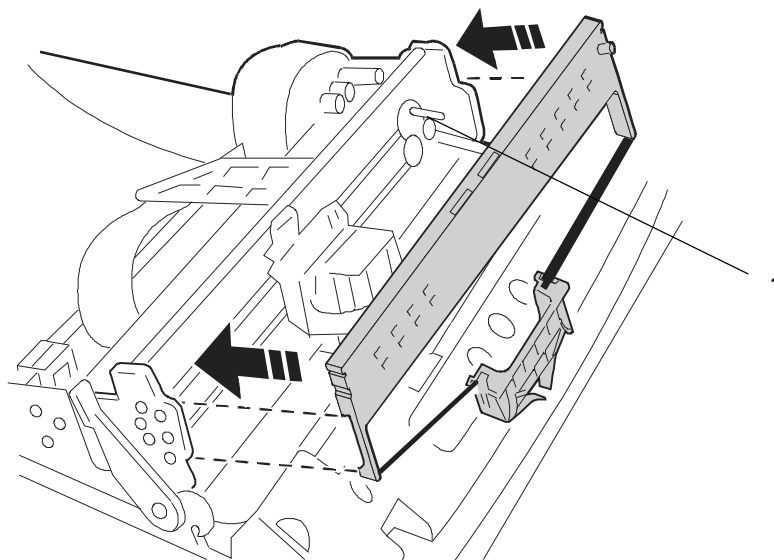
*Fig. 3-16 Lifting the Upper Mechanical Assembly*

- Push the ribbon guide downwards until it releases from the print carriage.
- Remove the old cartridge by pulling it outwards.



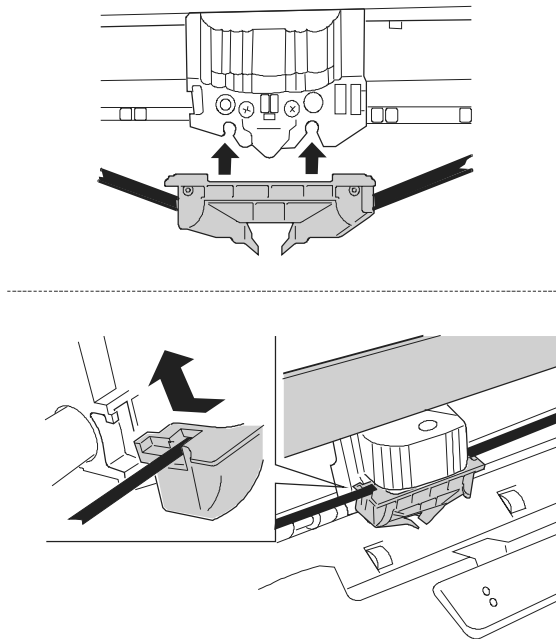
*Fig 3-17 Removing the Ribbon Cartridge*

- Insert the cartridge into the feed gears, hooking it on the two sides and making sure to insert pin (1) into the related hole of the ribbon feed knob.



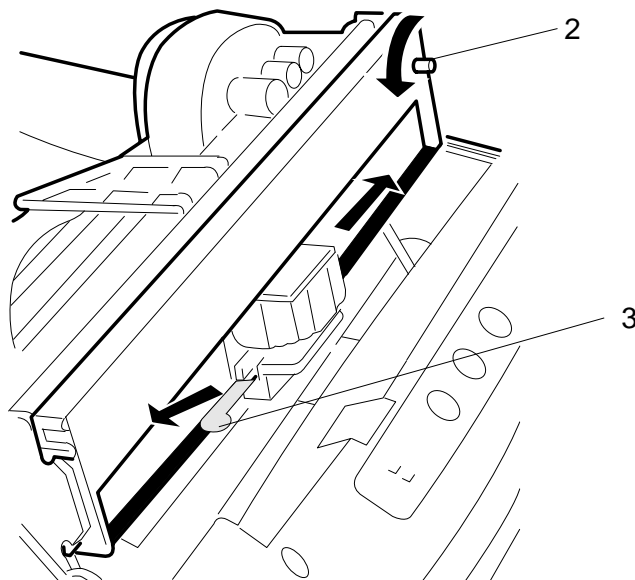
*Fig. 3-18 Inserting the Ribbon Cartridge*

- Insert the ribbon guide frontwards and then lift it until it hooks on to the two elastic pins on the carriage's open slots behind behind the printhead platen (a "clack" sound is heard).



*Fig. 3-19 Hooking the Ribbon Guide*

- Turn the carriage knob counterclockwise (2) until the ribbon is taut and then remove tab (3).



*Fig. 3-20 Removing the Tab*

- Using the specific lever, completely lower the upper part of the mechanical assembly containing the printhead and ribbon cartridge.
- Close the printer cover.
- Power on the machine.

### **3.7.5.2 REPLACING THE RIBBON CARTRIDGE WITH THE MACHINE POWERED OFF**

The ribbon cartridge can be changed with the machine powered on and by following the procedure listed below:

- Open the printer cover; printing stops automatically.
- Lift the upper mechanical assembly by using the appropriate lever.
- Remove the used cartridge and replace it with a new one as previously described.
- Lower the upper mechanical assembly by using the appropriate lever.
- Close the printer cover.

**Note: DO NOT move the printhead manually.**

### **3.7.6 PAPER JAMS**

The paper could jam along its path inside the machine.

Jamming could be caused by one of the following:

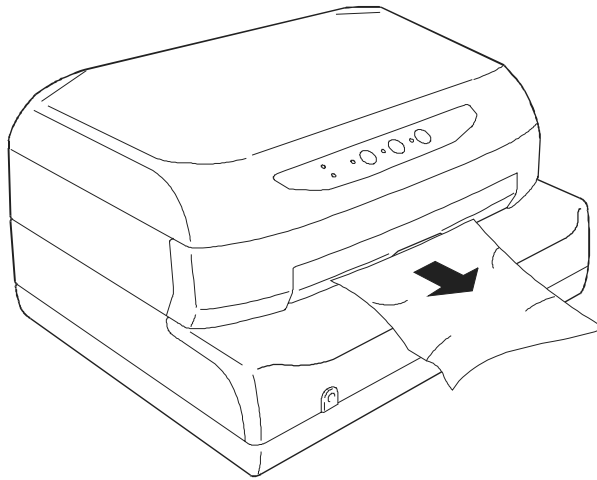
- Obstructed paper path (for example, residual pieces of paper)
- Paper skew
- Paper weight or size non-compliant with the specifications
- Crumpled, folded or badly preserved paper
- Stapled paper or with paper clips (this can seriously damage the machine)
- Multicopy forms where the sheets are poorly glued together.

The areas where jams are more likely to occur are:

- front document feed slot
- inside the printer
- rear document output slot

### **3.7.6.1 PAPER JAMS AT THE FRONT DOCUMENT FEED SLOT**

To remove a jammed document from the front feed slot, carefully pull the document from the printer to avoid ripping it.

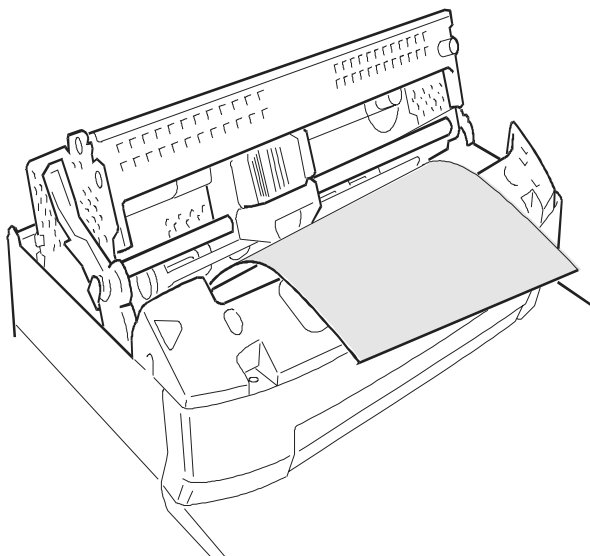


*Fig. 3-21 Removing the Document from the Front Feed Slot*

### **3.7.6.2 PAPER JAMS INSIDE THE PRINTER**

Proceed as follows to remove a document from inside the printer:

- Open the cover without powering off the machine.
- Lift the upper mechanical assy by using the upper mechanical assy lifting lever.
- Remove the jammed document by carefully pulling it from the printer.



*Fig. 3-22 Removing a Document from Inside the Printer*

If pieces of paper are jammed in inaccessible areas inside the machine, proceed as follows to remove them:

- 1) Open the cover and power on the printer while pressing the STATION 1/EJECT button.
- 2) Wait for an audible signal to sound.
- 3) Press STATION 1/EJECT and/or STATION 2/EJECT to move the paper forward/backward so that the jam can be cleared.
- 4) Power off the machine and close the cover before powering it back on again.

### **3.7.6.3 PAPER JAMS AT THE REAR OUTPUT SLOT**

To remove a document from the rear output slot, without opening the cover carefully pull the document outward trying not to tear it.



*Fig. 3-23 Removing a Document from the Rear Output Slot*



## 4. AUTODIAGNOSTICS, SETUP AND ADJUSTMENTS

### 4.1 POWER-ON DIAGNOSTICS

At power on, besides a general reset the printer runs an autodiagnostic routine that checks the efficiency of all machine components.

Upon the successful completion of the autodiagnostic routine the printer switches to the READY state (ON and READY LEDs lit).

The table below indicates the meaning of the LEDs according to the type of failure detected during the autodiagnostic phase.

FAILURE \ LED	ON	READY	ST1	LOCAL	ST2
Power supply assy failure	OFF	OFF	OFF	OFF	OFF
On-board failure: - Eprom - ROM - Microprocessor	ON	OFF	OFF	OFF	OFF
Failure with: - Fuses - Drivers - Motors	ON	ON	ON	ON	ON
Activation board failure	The motors do not perform any kind of movement				

## 4.2 PRINT TEST

The print test provides a printout of the machine's set-up parameters.

The instructions to run this test are given in section 3.3, Off-line Testing.

## 4.3 PRINTER SET-UP

The Set-up environment should only be accessed by the service engineer and programmer since some of the selectable parameters are used to customize the machine or option installed and must therefore not be changed. An incorrect intervention by the operator could cause printer malfunction.

### 4.3.1 ACTIVATING THE SET-UP

To enter the set-up environment, power off the machine and then power it back on again while pressing the ST1 (Station 1) and ST2 (Station 2) buttons simultaneously.

Upon completion of the printer reset phase, load an A4 sheet of paper: the machine will print a line with a description of the functions of all the keys in this environment.

The flow charts on the following pages indicate the different ways in which the various set-up environments can be accessed.

### 4.3.2 SUPPORT SOFTWARE

The software tools include all tools and languages that the product needs for the environments in which it will be used.

- Promotional demo  
The program features an appropriate product presentation format and exploits all the operating modes and options available.  
It highlights the features and performance offered by the printer in every configuration and optimizes the operational cycle so as to reach the maximum performance obtainable.
- Drivers  
Based on the Olivetti native protocol, they integrate the entire range of features handled by industry-standard applications.
  - Reference command sets   STD 12/14 PR2E
  - DLL driver provided        WIN NT 4.x/2000, WIN 95/98
  - Environment DLL            WOSA
- Set-up management software  
A specific program developed for set-up management on-line. It displays the product's set-up parameters and makes it possible to change them, handshaking included.
- Font and logo management software  
A program used to create unusual graphical representations or special fonts.

### 4.3.3 CONFIGURATION PARAMETERS

This section provides the description and possible values of the printer's different set-up parameters.

The default value is indicated in bold.

#### 4.3.3.1 CONFIGURATION MODE MENU PARAMETERS

DRAFT SPEED: <u>NORMAL</u> - HIGH	Determines the Draft mode that can be activated via SW and by default.
LQ TYPE: <u>NLQ1</u> - NLQ2 - LQ2	Determines the LQ type that can be activated via SW and by default
PAPER WIDTH: <u>FIRST LINE</u> – PROGRAMMABLE	Determines document position/width measurement position.
BUZZER: N - <u>Y</u>	Activates/deactivates acoustic signaling
INTERFACE: <u>RS 232 (1)</u> – OPTIONAL – DUAL	The optional interfaces are: <ul style="list-style-type: none"><li>- PARALLEL (DUAL-compatible)</li><li>- RS 232 (2) (DUAL-compatible)</li><li>- USB</li></ul>

---

#### (when) RS232C (1)

EMULATION: <u>OLIVETTI</u> – IBM	Interface default emulation
BAUD RATE: <u>9600</u> - 4800 - 2400 - 1200	Data transmissi <sup>o</sup> ne/reception rate
BIT/CHAR: 7 - 8	7- or 8-bit data format.
PARITY: <u>NONE</u> - ODD - EVEN	Type of parity checking.
STOP BIT: <u>1</u> - 2	Number of stop bits
DSR: N - <u>Y</u>	Data Set Ready handled or not.
DCD N - <u>Y</u>	Data Carrier Detector handled or not.

PAPER EDGE DETECTION: N - Y

When enabled (Y), inhibits the printing of lines that are wider than the sheet inserted. Causes a paper jam (ESC r 1) in the Olivetti environment.

For electronic HW reasons, the width of the document is automatically measured only during the document insertion phase. Therefore if the sheet of paper loaded has a variable width, the different size will not be detected during the printing phase.

SPECIAL FORMS: N - Y

When enabled (Y), every paper movement is performed with the printhead positioned outside the margins of the sheet of paper. This makes it possible to use the lightest forms indicated in the paper specifications thus avoiding the forms to crumple.

SAVE PARAMETERS: Y - N

Stores or not the settings made.

---

## **IBM Menu**

EMULATION: P.P. II - X 24

Selects the IBM emulation wanted

---

**(when) X24**

AGM: N – Y

Enables/disables the AGM function.

---

PASSBOOK: N - Y

Indicates whether the printer is enabled or not to handle savings books.

---

**(when) Passbook Y**

BINDING: VERTICAL - HORIZONTAL

Used when the “PASSBOOK: Y” setting is made. Selects the type of savings book binding (horizontal or vertical). If horizontal binding is selected, during a savings book print job the printhead will move outside the margins of the savings book so as to improve the feed of the savings book itself.

SIDE : L - R

Selecting “R (Right)” ensures SW compatibility with the PR50 with right-hand alignment. Selecting “L (Left)” ensures SW compatibility with the PR50 with left-hand alignment.

---

CHAR SET: PC - ISO

Character generator selection.

---

**(when) PC CHAR SET:**

DK/N

DK

210 (GR)

220 (E)

437 (INT)

850 (LATIN 1)

851 (GREEK)

852 (LATIN 2)

855 (CYRILLIC)

857 (LATIN 5)

858 (LATIN EURO)

860 (P)

862 (IL)

863 (CANADIAN FRENCH)

864 (ARABIC)

865 (NORDIC)

866 (CYRILLIC)

1250 (PC WIN Latin2)

1252 (PC WIN Latin1)

**(when) ISO SET:**

OLI-UNIX  
ISO 8859/1  
ISO 8859/2  
ISO 8859/5  
ISO 8859/6  
ISO 8859/7  
ISO 8859/8  
ISO 8859/9  
ISO 8859/15

---

PC TABLE: TABLE 1 - <u>TABLE 2</u>	Selects the character generator table.
CHAR DEFINITION: LQ - <u>DRAFT</u>	Selects the character definition.
CPI: <u>10</u> - 12 - 17.1	Selects the print pitch expressed in number of characters per inch.
LF + CR: <u>N</u> - Y	Selects or not the execution of an automatic carriage return each time a line feed command is received.
CR + LF: <u>N</u> - Y	Selects or not the execution of an automatic line feed each time a carriage return command is received.
ZERO SLASH: <u>N</u> - Y	Enables/disables slashed zero printing.
LINE LENGTH: <u>80</u> - 90	Selects maximum print line length expressed in number of character at 10 cpi.
FORM LENGTH: 11 - <u>12</u>	Selects the maximum form length expressed in inches.
BOTTOM MARGIN IBM-PP LIKE: N - <u>Y</u>	Selects the form's bottom margin (BOF). N - The Bottom of Form value is 4.23 mm. Y - The Bottom of Form value is 13.7 mm.

TOP MARGIN IBM-PP LIKE: N - Y

Selects the form's top margin (TOF).

N - The Top Of Form value will be included between 4.23 mm (defined by the adjustment) for documents and 7.4 mm per savings books.

Y - The Top Of Form value will be 4.23 mm for documents and 7.4 for passbooks.

PNS SELECTION: N - Y

Selecting (Y) grants access to the PNS selection menu in the IBM environment.

---

**(when) PNS SELECTION: Y**

PNS # 4192 : N - Y

If enabled, upon reception of a Form Feed command the document is expelled regardless of the form length selected.

PNS # 4501 : N - Y

Selects a 1/5" spacing value.

SAVE PARAMETERS: Y - N

Stores or not the settings made.

## Olivetti Menu

EMULATION: PR2E - PR40

Selects the OLIVETTI emulation

---

### **(when) PR40+**

LINE BUFFER PR40 LIKE: N - Y

Sets the reception buffer length like the PR40 (1K byte) or to 8 K byte.

TOP MARGIN PR40 LIKE: N - Y

TOF management with fixed (PR40) or adjustable mechanical header.

---

### **(when) PR2E**

PASSBOOK: N - Y

Enables the printer to handle savings books.

---

### **(when) Passbook Y**

BINDING: VERTICAL - HORIZONTAL

Used when the "PASSBOOK: Y" setting is made. Selects the type of savings book binding (horizontal or vertical). If horizontal binding is selected, during the printing on a savings book the printhead is positioned outside the margin of the savings book so as to improve the feed of the book itself.

---

SIDE : L - R

Selecting "R (Right)" ensures SW compatibility with the PR50 with right-hand alignment. Selecting "L (Left)" ensures SW compatibility with the PR50 with left-hand alignment.

CHAR GENERATOR: IBM/PC - OLIVETTI Selects the character generator.

---

### **(when) IBM CHAR SET: PC - ISO**

IBM emulation PC or ISO character sets regardless of the selection made.



**(when) PC CHAR SET:**

DK/N

DK

210 (GR)

220 (E)

437 (INT)

850 (LATIN 1)

851 (GREEK)

852 (LATIN 2)

855 (CYRILLIC)

857 (LATIN 5)

858 (LATIN EURO)

860 (P)

862 (IL)

863 (CANADIAN FRENCH)

864 (ARABIC)

865 (NORDIC)

866 (CYRILLIC)

1250 (PC WIN Latin2)

1252 (PC WIN Latin1)

---

**(when) ISO SET:**

OLI-UNIX

ISO 8859/1

ISO 8859/2

ISO 8859/5

ISO 8859/6

ISO 8859/7

ISO 8859/8

ISO 8859/9

ISO 8859/15

**(when) OLIVETTI CHAR SET:**

INT  
USA  
D  
P  
E  
E2  
DK/N  
F  
I  
S/SF  
CH  
UK  
YU  
IL  
GR  
CND  
STD 31  
SDC  
TR  
ARABIC  
USSR  
CIBC

---

CHAR DEFINITION: <u>DRAFT</u> - LQ - OCRA - OCRB	Selects the character definition.
CPI: 5 - <u>10</u> - 12 - 15 - 16.6 - 17.1	Selects the print pitch.
COMPRESSED: <u>16,6</u> – 17,1	Defines the spacing selected with ESC >
VERTICAL RESOLUTION: 1/216" - <u>1/240"</u>	Selects the vertical resolution.
LF + CR: <u>N</u> - Y	Selects whether to execute or not an automatic carriage return each time a line feed command is received.

LINE LENGTH: <u>90</u> - 94	Selects the maximum print line length expressed in number of characters at 10 cpi.
PRINTER REPLY SYNCRONIZED: <u>N</u> - Y	DSR management during a transmission
STATUS REQUEST: <u>NO WAIT</u> - WAIT	Determines the timing of the status reply upon reception of an ESC j command. By selecting NO WAIT, the reply will be provided as soon as possible and simultaneously with the execution of a print job or paper movements. By selecting WAIT, the status reply will be provided at the end of the print job.

---

**(if the Horizontal Magnetic device/MICR is present)**

OPTION HORIZONTAL MSRW	This message warns that the option is installed. There is no selection to be made, and the next option available is printed right after it. If the Horizontal magnetic device/MICR option is present, the caption "+MICR" will appear next to "MSRW".
------------------------	---

---

STANDARD: DIN/ISO - ANSI - <u>IBM 3604</u>	Sets the magnetic standard.
--	-----------------------------

---

**(when) IBM 3604**

END-SENTINEL: <u>C</u> - F	Sets the end-sentinel code.
----------------------------	-----------------------------

DISPLACEMENT: STANDARD +10 +20	Defines the position of the magnetic stripe.
--------------------------------	--

DUPLICATE: N - Y	Selects field duplication or not.
------------------	-----------------------------------

DOUBLE FIELD CHECK: N - Y	Selects double field check or not
---------------------------	-----------------------------------

RETRY: 3 - 1	Defines the read attempts.
--------------	----------------------------

STRIPE HANDLING: NORMAL - FAST	Defines normal or fast magnetic stripe reading. When Normal is selected, at each magnetic stripe read or write operation a savings book length measurement is performed so as to determine the exact position of the stripe. When Fast is selected, the length of the savings book is measured randomly with the procedure explained in the specific chapter; savings book measurements are not made during stripe read/writes thus speeding stripe management.
--------------------------------	---

**(when) SIDE : R**

AFF : STD - USA

Selects print line width.

LINE BUFFER PR2845 LIKE: N - Y

Defines the reception buffer length like the 2845 (512 Bytes) or to 8 Kbytes.

NATION:     INT  
              USA  
              D  
              P  
              E  
              E2  
              DK/N  
              F  
              I  
              S/SF  
              CH  
              UK  
              YU  
              IL  
              GR  
              CND  
              STD 31  
              SDC  
              TR  
              IS

---

CHAR DEFINITION: DRAFT - LQ

Selects the character definition.

CPI: 10 - 12

Selects the print pitch.

LF: 1/5" - 1/6"

Selects the line feed.

WARNING:  
END OF PAPER - PHOTO SENSORTOP

Selects the indication for out of paper or for photosensor covered.

TOP OF FORM: 1 - 2

Selects the first or second printable line.

STATUS REQUEST: NO WAIT - WAIT

Determines the timing of the status reply upon reception of an ESC j command. By selecting NO WAIT, the reply will be provided as soon as possible and simultaneously with the execution of a print job or paper movements. By selecting WAIT, the status reply will be provided at the end of the print job.

SAVE PARAMETER ? : Y - N

Stores or not the settings made in this Set-up section.

---

## 4.4 SETTINGS

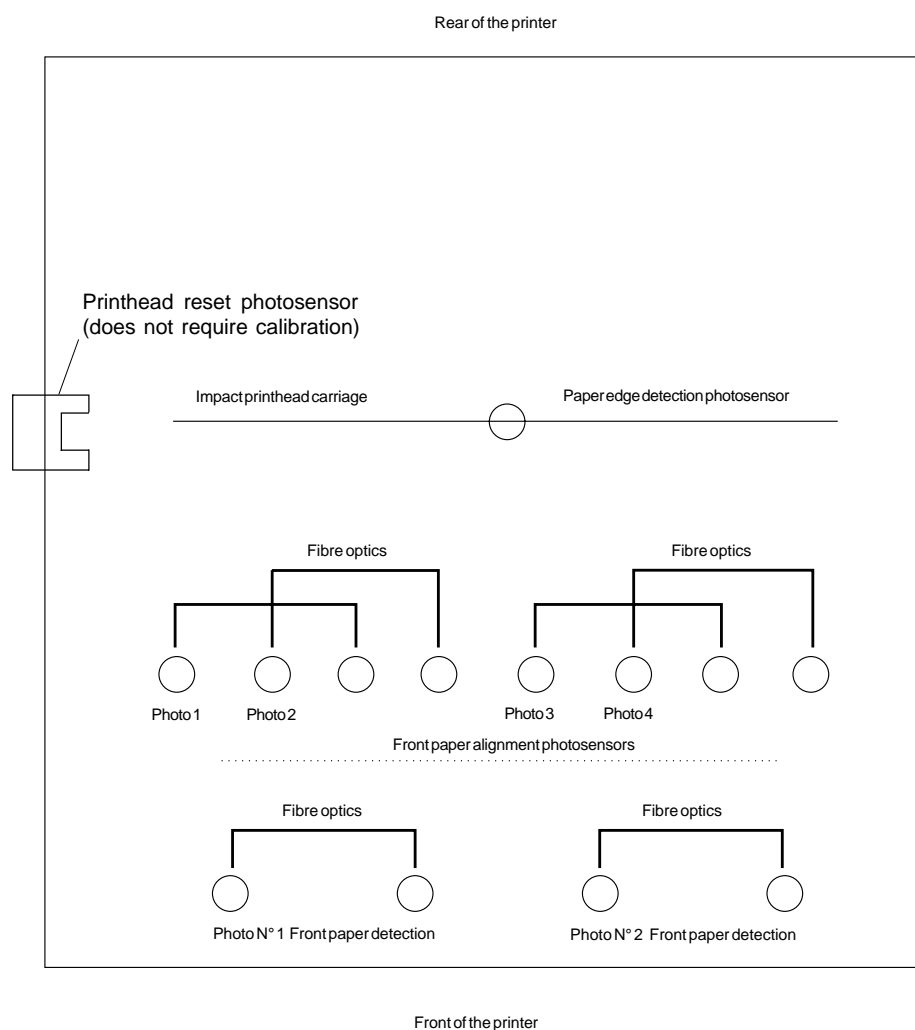
### 4.4.1 PHOTSENSOR CALIBRATION

All machine photosensors are calibrated at the factory. However, a change in the electrical characteristics of the photosensors used or the use of non-standard paper may call for the photosensors to be recalibrated at the customer's site.

All the photosensors present in the machine require calibration; the following are installed:

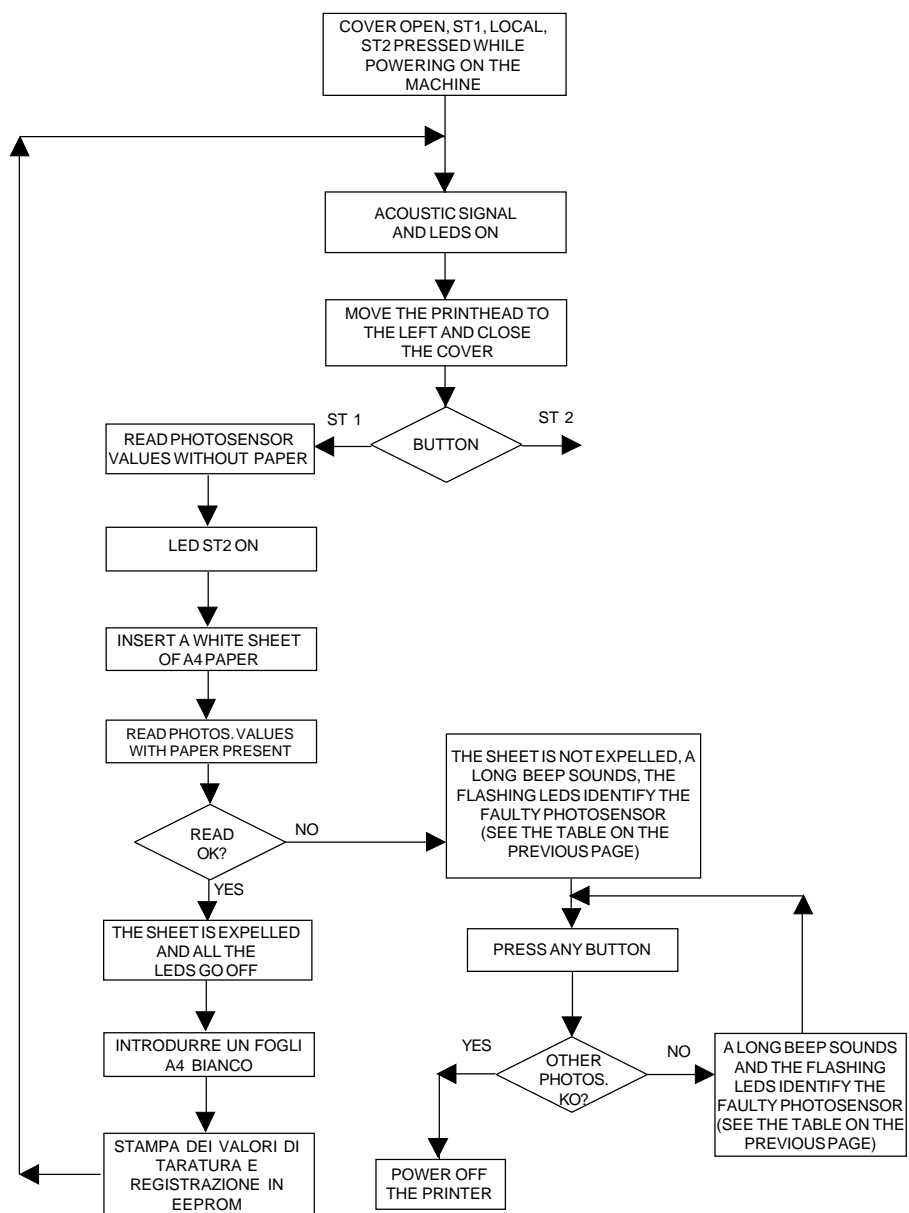
- Paper detection photosensor assembly  
This assembly consists of two LEDs and two photoreceivers that are the first to detect when a document is inserted in the front insertion slot. The ray of light is transmitted by fibre optics.
- Paper front alignment photosensor assembly  
These photosensors are included in the same mechanical assembly as the paper detection photosensors, indicated in this manual as Front photosensor assembly.  
The paper front alignment photosensors check the alignment of the document before it reaches the printhead. The assembly consists of four LEDs and four photoreceivers, all connected via fibre optics.
- Autoborder photosensor  
Fitted on the printhead, it detects the paper so as to measure the position of the first print column.  
If selected from Set-up, with this sensor it is also possible to control printing interruption in cases when the paper is narrower than the line being printed and sent from the system.

The location of the individual photosensors in the machine is shown in the figure on the following page.



*Fig. 4-1 Locating Machine Photosensors*

Provided below is the photosensor calibration block diagram.





Proceed as follows to calibrate the photosensors:

1. Power on the printer with its cover open and while holding down the three buttons on the console.
2. Wait for the audible signal indicating that the printer has switched to the calibration and adjustment procedures.
3. Manually position the printhead towards the left-hand side and then close the cover.
4. Press the "Station 1" button twice to enter the menu.
5. Upon the completion of this phase, the sensors have stored the electrical current ratings with the printer in an out of paper condition.
6. Insert a sheet of 60 gr/m<sup>2</sup> paper, in the landscape position, into the front insertion slot. During this phase the motor continues to turn forcing the paper against the brush.
7. Press the "Station 2" button. Wait for the sheet feed and expulsion movement to be completed. If no failure is detected, after the expulsion of the sheet of paper the console LEDs will remain off; the reloading of an A4 sheet of paper will allow you to print the values read and selected for each single photosensor.



#### **4.4.1.1 PRINTING PHOTSENSOR CALIBRATION VALUES**

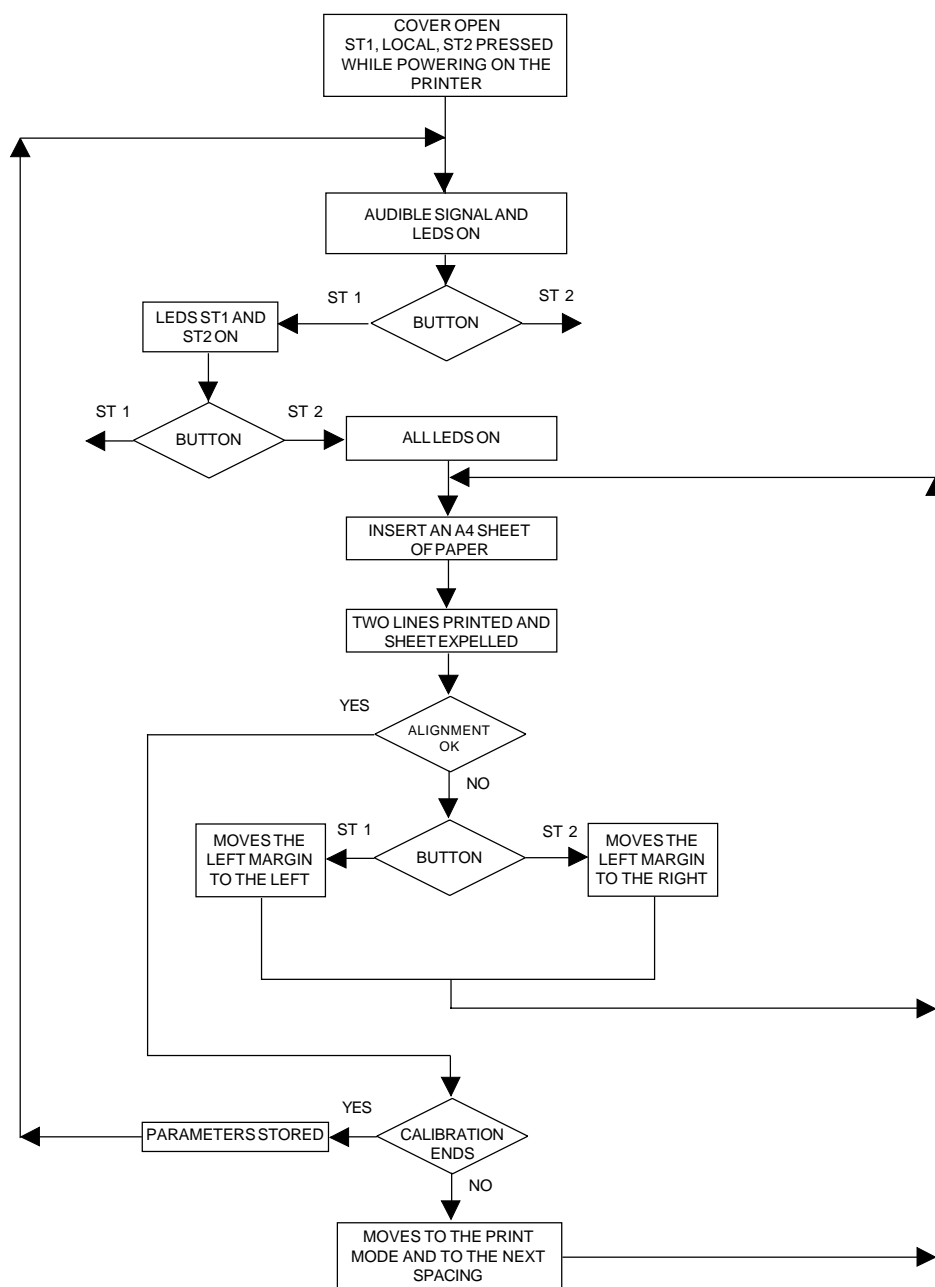
Printing photosensor calibration values is useful as reference between one calibration and the next.

Proceed as follows for alignment calibration:

1. Power on the printer with its cover open and while holding down the three buttons on the console.
2. Wait for the audible signal to sound indicating that the printer has switched to the calibration and adjustment phase, then close the printer cover.
3. Press the STATION 1 button.
4. Press the LOCAL button.
5. When reset is completed, insert an A4 sheet of paper.
6. The sheet is inserted, printed and automatically expelled. The printer automatically switches to the next calibration phase.

#### 4.4.2 BI-DIRECTIONAL PRINT ALIGNMENT CALIBRATION

Provided below is the bi-directional print alignment calibration block diagram.



**Note:** The printer switches between modes and spacings automatically.

Alignment calibration corrects any bi-directional printing misalignment possibly caused by the printer's mechanical tolerances. Bi-directional printing alignment can be optimized by means of a calibration procedure which must be performed for each of the following print modes:

- High Speed Draft                10 cpi
- Draft                                10 cpi
- Draft                                12 cpi
- Near letter quality            10 cpi
- Letter quality                    10 cpi

Each print mode has two types of calibration. One type of calibration is for the printing of lines without tabulation stops and the other is for the printing of lines with tabulation stops. For this reason two specific texts will be printed, one for each print mode to be calibrated.

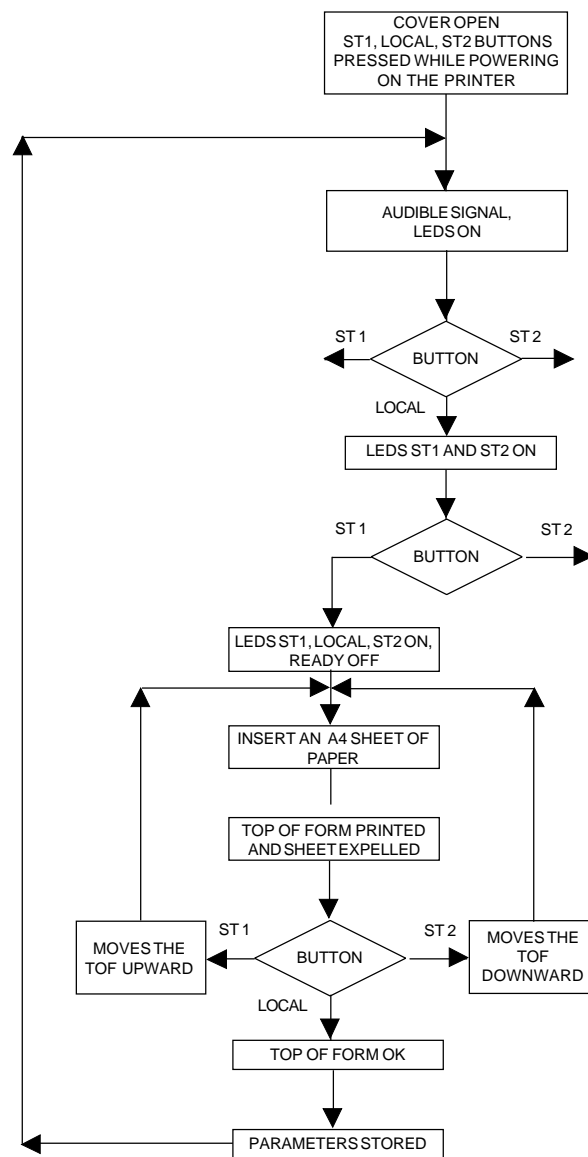
Proceed as follows to calibrate the alignments:

1. Power on the printer with its cover open and while holding down the three console buttons.
2. Wait for the audible signal indicating that the printer has switched to the calibration mode and then close the printer cover.
3. Press the Station 1 button.
4. Press the Station 2 button.
5. The three console buttons are now active. The "Station 1" button activates printing ahead of time while "Station 2" delays printing.
6. Pressing the Station 1 and Station 2 buttons before step 5 stores approximate default values, very close to the correct ones, for all the print modes.
7. Insert an A4 sheet of paper into the front feed slot to check the print alignment status.
8. Press "Station 1" and/or "Station 2" to calibrate the alignments.
9. Repeat steps 7 and 8 cyclically until the calibrations are completed.
10. Press the "Local" button twice to permanently store the alignment setting for the current print mode and to automatically switch to the next adjustment.

Calibration ends when all the print modes are completed or by simultaneously pressing all three console buttons. In both cases the printer will switch to the main menu.

#### 4.4.3 TOP OF FORM (TOF) CALIBRATION

Provided below is the Top Of Form (TOF) calibration block diagram.



This calibration sets the distance between the form TOF and the first print line.

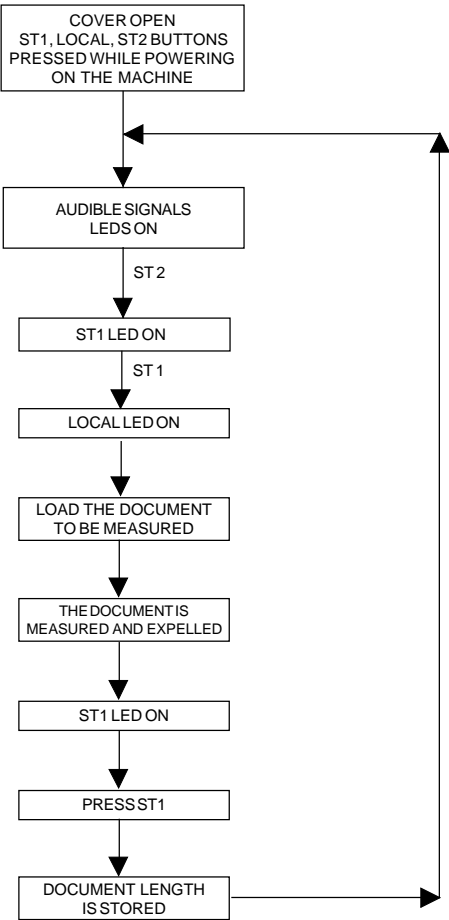
The adjustment can only be activated if the "TOP MARGIN PR40 LIKE" parameter in the PR40+ emulation setup was set to "N".

Proceed as follows to perform this calibration:

1. Power on the printer with its cover open and while holding down the three buttons on the console.
2. Wait for the audible signal indicating that the printer has switched into the calibration and adjustment procedures.
3. Press the Local button and then wait for the printer to complete its reset.
4. Press the Station 1 button; the three console buttons are now active. By pressing Station 1 you can reduce the TOF while by pressing Station 2 you can increase it.
5. Insert an A4 sheet of paper into the front feed slot to check the status of the current TOF. This check is made by printing a specific test. If the current TOF value is too high, printing may occur off the sheet of paper.
6. Press "Station 1" and/or "Station 2" to decrease or increase the TOF.
7. Repeat points 6 and 7 cyclically until the calibrations are complete.
8. Press "Local" twice to permanently store the TOF and to automatically move on to the next calibration.

4.4.4 LEFT PRINT MARGIN CALIBRATION

Provided below is the left print margin calibration block diagram.





This calibration sets the distance between the left edge of the and the first print character.

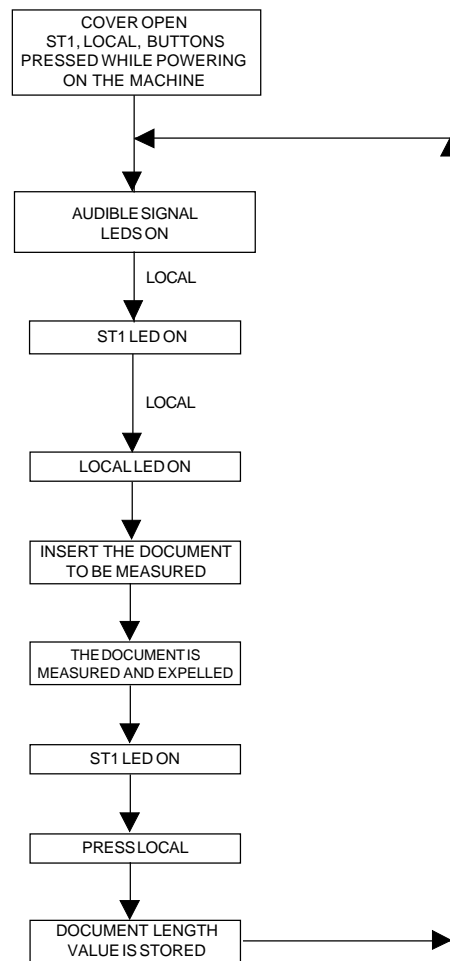
The left margin value will always be used, without the need for set-up configurations.

Proceed as follows to perform this calibration:

1. Power on the printer with its cover open and while holding down the three buttons on the console.
2. Wait for an audible signal to indicate that the printer has switched to the calibration and adjustment mode.
3. Press Local and wait for the machine to complete its reset.
4. Press Station 2.
5. Press the Station 1 button until hearing a prolonged dual-tone signal (different from the previous).
6. Insert an A4 sheet of paper and wait for the printed page. Check that the left margin has the required measurement.
7. The minimum distance between the left edge of the document and the beginning of the character must be a maximum of 0.5 mm with console calibration completely to the left. If this condition is not met, recalibrate the photosensor.
8. Check according to the requirements of step 6.
9. By pressing Station 2, move the left margin rightward until reaching  $6.95 \pm 0.55$  mm defined by the DIMA code 473284Z (check made by inserting an A4 sheet of paper)
10. Press Local twice.

#### 4.4.5 DOCUMENT LENGTH MEASUREMENT

Provided below is the document length measurement block diagram.



Form length measurement is necessary for a rapid handling of a savings book magnetic stripe. By selecting the "STRIPE HANDLING: FAST" set-up option, the value provided by the form measurement procedure will be used to determine the position of the magnetic stripe and to position the stripe above the magnetic head without needing to further measure the length of the savings book. This entails greater time saving during savings book management. For this feature to work correctly the same savings books measured must be used.

Proceed as follows to make this calibration:

1. Power on the printer with its cover open and while holding down the three buttons on the console.
2. Wait for the audible signal indicating that the printer has switched into the calibration and adjustment mode.
3. Press the Local button and wait for the completion of machine reset.
4. Insert an A4 sheet of paper into the front insertion slot and then press Station 1. The sheet will be inserted and expelled automatically.
5. If necessary, repeat step 5.
6. Press Local twice to permanently store the form length value measured and to automatically switch to the next calibration.

#### 4.4.6 SKEW AND SIGNAL AMPLITUDE CONTROL

This check must be performed with the machine completely assembled and after having configured and specified, during set-up, the magnetic device installed on the printer.

The signal source must be exclusively the following card:

- AMPLITUDE AND SKEW SAMPLE code 713483R for horizontal magnetic unit.

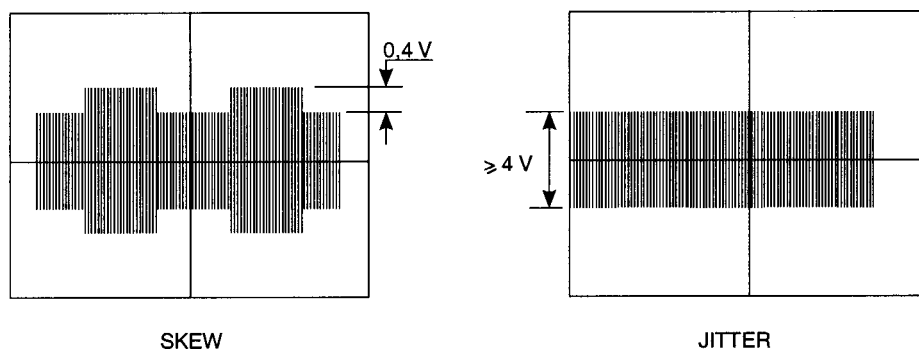


Fig. 4-2

Using an oscilloscope with memory, proceed as follows:

- Insert the "Amplitude and Skew Sample" chart code 751884Z into the front feed slot from the Skew Control side. Record the signal read when the printhead moves from right to left. The signal recorded must not have a spread greater than 0.4V. No action is required.
- Insert the "Amplitude and Skew Sample" chart code 751884Z into the front feed slot from the Jitter/Ampl. side. Record the signal read when the printhead moves from right to left. If the signal recorded does not reach the value of 4V, replace the printhead.

#### 4.4.7 SIGNAL AMPLITUDE CONTROL

This control must be performed in the same way as the previous. Insert a sample chart so that the jitter and amplitude of the sample stripe are read. The printer will perform a read cycle before expelling the chart. Using an oscilloscope with memory, check the amplitude of the signal read which must be uniform and must have a value of no less than 4V peak-to-peak.

The check must be made when the printhead moves from right to left within the horizontal magnetic reader.



## **5. PRODUCT DIAGNOSIS**

### **5.1 SERVICING MODES**

The following pages provide a technical approach to servicing that could be useful to less experienced field engineers.

#### **5.1.1 FAULT DETECTION ANALYSIS**

The user who detected product malfunction can give information regarding the operating mode the printer was in when the malfunction occurred and the related error indications that were provided.

The repetition of the fault, when possible, can help with its identification.

For fault diagnosis purposes, it is important to establish whether the fault is repetitive or random.

#### **5.1.2 ANALYSIS OF THE OPERATING CONDITIONS**

##### ***WORK ENVIRONMENT***

An environment that is too cold, hot or humid could be the cause of certain malfunctions.

The machine must not be positioned near air conditioning system vents or exposed to direct sun light.

Make sure that the machine's internal ventilation slots are not blocked, especially if the printer is installed in furniture.

Forms, documents or office equipment located .

##### ***ACCESSORIES AND FORMS***

Make sure that the accessories installed in the machine are originals and in good condition.

Check that the documents inserted in the printer comply with the machine specifications and are in good condition.

##### ***PRINTER OPERATING CONDITION***

Check that the internal parts of the machine have no dirt deposited or residue of paper or ink that could interfere with the performance of the printer's different components.

Make sure there is no internal damage caused by the insertion of documents with metal clips, staples, pins or similar.

Ensure that the parts specified are correctly lubricated.

### **5.1.3 IDENTIFYING THE MALFUNCTION**

Carefully examine all the information collected (from the Operator, printer error signals, analysis of the documents where the fault has occurred, repetition of the error when the machine is powered on, etc.) to recognize and identify the machine malfunction to be corrected.

At times a malfunction is generated by more than one cause: it is important in such cases to isolate the faults and deal with them one at a time.

### **5.1.4 FINDING THE CAUSE**

Using experience together with the information given in this section as a guide, take a logical path to find the fault, starting from the most probable cause through to the most remote possibility until faulty part is found.

### **5.1.5 SOLVING THE PROBLEM**

Repair the machine so that it correctly resumes to operate as normal.

The information provided in Chapters 6, 7, 8 and 9 can be of help.

### **5.1.6 TESTING THE MACHINE**

When the repair is completed, give the machine a general cleaning and then run a complete test on the machine (section 3.5), possibly with the Operator present, to make sure that the malfunction has been corrected and that no others have occurred in the mean time.

## 5.2 FAULT CLASSIFICATION

To make the search easier, the faults have been classified as follows:

- **5.3**            Power-on faults
- **5.4**            Document write faults
- **5.5**            Document handling faults
- **5.6**            Magnetic stripe read/write faults

Each fault classification lists the more probable failures and their possible causes.

The classification provided in this chapter cannot cover all the faults that could occur on the machine; if the fault detected is not described herein, refer to the description of a similar fault.

## 5.3 POWER ON FAULTS

<div> <div>FAULT</div> <div>POSSIBLE CAUSE</div> </div>	The printer does not power on	Autodiagnosics indicate a main board failure	Autodiagnosics indicate a mechanical failure	The printer is unable to connect with the system
Incorrect/missing line voltage	<b>X</b>			
Damaged power cord	<b>X</b>			
Power cord partly inserted	<b>X</b>			
Blown fuse	<b>X</b>			
Faulty power supply unit	<b>X</b>			
Faulty main board		<b>X</b>		<b>X</b>
Faulty front photosensors			<b>X</b>	
Faulty carriage photosensor			<b>X</b>	
Faulty rear photosensor			<b>X</b>	
Printer cover open			<b>X</b>	
Jammed paper			<b>X</b>	
Interface connection problems				<b>X</b>
Interface line problems				<b>X</b>
Incorrect set-up				<b>X</b>



## 5.4 DOCUMENT WRITE FAULTS

<div> <div>FAILURE</div> <div>POSSIBLE CAUSE</div> </div>	Printhead does not write	Faded printing	Stained printing	Incomplete printing	Unaligned printing	Deformed printing with irregular spacing
Ribbon cartridge not installed	X	X				
Ribbon to be replaced (finished)		X				
Ribbon cartridge fitted incorrectly	X	X		X		
Incorrect set-up parameters					X	X
Obstruction along the carriage stroke	X					X
Closing levers open	X	X		X	X	
Faulty printhead	X			X		
Faulty paper photosensor	X				X	X
Faulty head flat cable	X			X	X	X
Transport motor	X					X
Faulty main board	X			X		
Paper feed belt adjustment					X	
Needle-platen distance adjustment	X	X	X	X		
Ribbon-needle protection fin adjust.	X	X	X	X		
Paper photosensor adjustment	X				X	X
Print bar adjustment	X	X				
Strap adjustment					X	
Roller gear adjustment					X	
Front pressure roller adjustment					X	
Carriage movement belt adjustment					X	X

## 5.5 DOCUMENT HANDLING FAULTS

<div> <div>FAILURE</div> <div>POSSIBLE CAUSE</div> </div>	The printer does not load/ expel the document	The document is moved crookedly	The document is crumpled	The document has irregular line feeds
Document not within specifications	X	X	X	X
Ruined document	X	X	X	X
Closing levers open		X	X	X
Faulty front photosensors	X			
Faulty paper photosensor	X			
Faulty rear photosensor	X			
Faulty services motor	X			
Faulty paper feed motor	X			X
Faulty main board	X			
Document feed belt adjustment			X	
Needle-platen distance adjustment			X	
Ribbon-needle protection fin adjustment			X	
Paper photosensor adjustment	X		X	
Print bar adjustment			X	
Strap adjustment			X	
Roller gear adjustment				X
Front pressure roller adjustment				

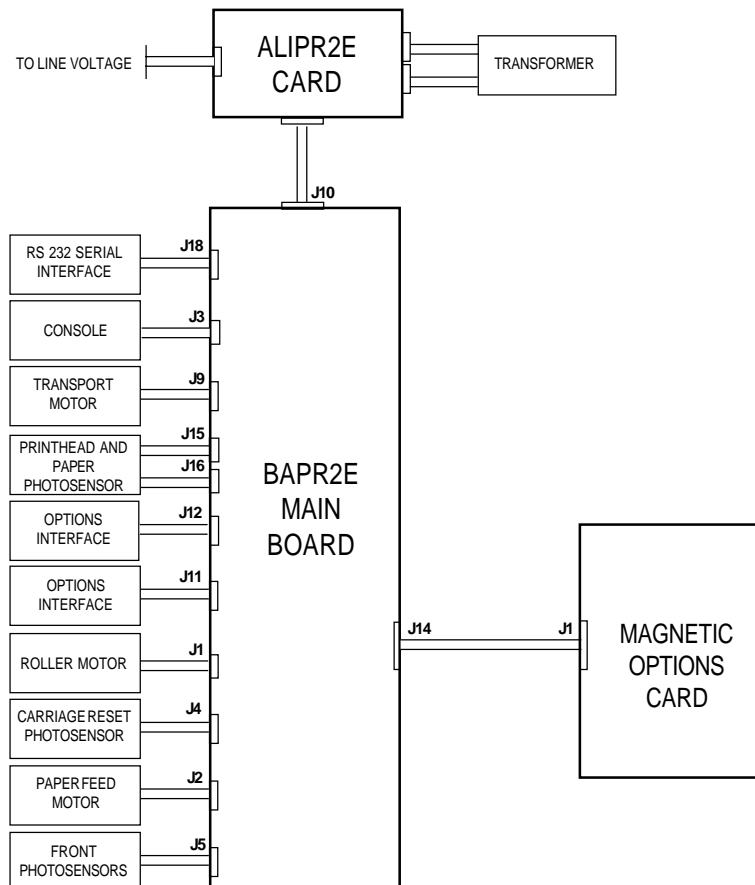
## 5.6 MAGNETIC STRIPE READ/WRITE FAILURES

<div> <div>FAILURE</div> <div>POSSIBLE CAUSE</div> </div>	Horizontal magnetic device read/write errors
Incorrect set-up	<b>X</b>
Ruined savings book	<b>X</b>
Incorrect savings book insertion	<b>X</b>
Dirty magnetic head	<b>X</b>
Faulty magnetic head	<b>X</b>
Faulty paper feed motor	<b>X</b>
Faulty magnetic device card	<b>X</b>
Faulty main board	<b>X</b>
Faulty magnetic head movement motor	<b>X</b>



## 6. ELECTRICAL INTERCONNECTIONS

### 6.1 GENERAL PRINTER INTERCONNECTION DIAGRAM



## 6.2 BAPR2 MAIN BOARD

The BAPR2 main board has an onboard serial interface. The printer can be configured with one of the following two interface cards:

- RS232 serial + UBS
- Centronics parallel.

### 6.2.1 MAIN BOARD VIEW AND LOCATION OF CONNECTORS

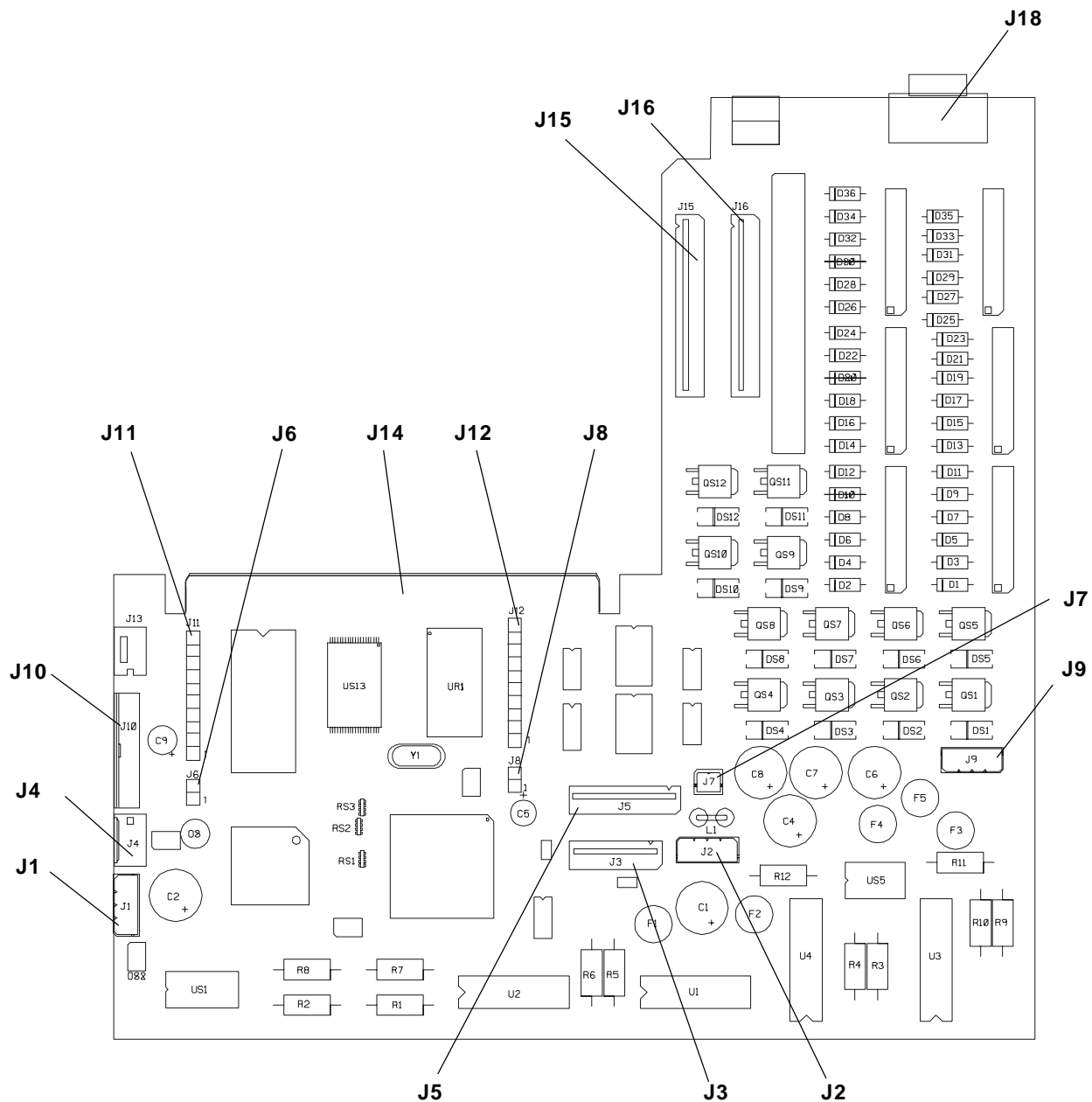


Fig. 6-1 Main Board on the PR2 E

### 6.2.3 CONNECTOR PIN-OUT

Provided below are the pinouts of the connectors on the PR2 E main board. Connector J33 is not indicates since it is only present on the BAPR2E Cost Improvement version.

#### J18

(RS 232 INTERFACE)

1	DCD1
2	RX01
3	TX01
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	TERRSE

#### J3

(CONSOLE)

1	GND
2	P5CONS
3	LED3
4	LEDLOC
5	LED2
6	LED1
7	LEDON
8	TAS01
9	TALOC
10	TAS02
11	COPEN
12	GND

#### J10

(POWER SUPPLY)

1	PIU35
2	PIU35
3	GND
4	GND
5	GND
6	VCC
7	PIU12
8	MEN12
9	RESE0

#### J9

(TRANSPORT MOTOR)

1	FASEA
2	FASEB
3	FASEC
4	FASED

#### J15

(PRINthead CONNECTOR)

1	TESTE
2	LEBCA
3	FOBCA
4	VCCTES
5	R0224
6	SPL(2)
7	R0422
8	SPL(4)
9	R0620
10	SPL(6)
11	R1214
12	SPL(12)
13	R0717
14	SPL(17)
15	R1113
16	SPL(13)
17	R1113
18	SPL(11)
19	R0519
20	SPL(5)
21	R0422
22	SPL(22)
23	R0123
24	SPL(23)
25	R0519
26	SPL(19)

#### J16

(PRINthead CONNECTOR)

1	R0818
2	SPL(8)
3	R1016
4	SPL(10)
5	R1214
6	SPL(14)
7	R0818
8	SPL(18)
9	R1016
10	SPL(16)
11	R0915
12	SPL(15)
13	R0915
14	SPL(9)
15	R0717
16	SPL(7)
17	R0321
18	SPL(3)
19	R0123
20	SPL(1)
21	R0620
22	SPL(20)
23	R0224
24	SPL(24)
25	R0321
26	SPL(21)

**J4**

(CARRIAGE RESET)

1	VCC
2	VCC
3	GND
4	FAZCA

**J2**

(PAPER FEED MOTOR)

1	TRF1A
2	TRF1B
3	TRF2A
4	TRF2B

**J1**

(ROLLERS MOTOR)

1	MR01A
2	MR01B
3	MR02A
4	MR02B

**J12**

(OPTIONS)

1	MAC21
2	MAC20
3	MAC11
4	MAC10
5	MAPH2
6	MAPH1
7	PIU35
8	PIU35
9	GND
10	GND

**J6**

(OPTIONS)

1	ADSEL
2	FDCDM

**J6**

(OPTIONS)

1	TXDS
2	SCKDS

**J99**

(FRONT PHOTOSENSORS)

1	FOCOM
2	VCCAL2
3	LECOM
4	LEAL3
5	LECOM
6	FOCOM
7	VCCAL4
8	FOAL3
9	VCC
10	FOAN2
11	LEAN2
12	LEAN1
13	FOAL1
14	FOAN1
15	LEAL1

**J11**

(OPTIONS)

1	VCC
2	CKMOT
3	DACOM
4	FAZMA
5	PMAGN
6	VERMA
7	RESE0
8	F2FDA
9	PIU12
10	GND

**J1**

(INTERFACE)

AD (15)	32	1	GND
AD (13)	33	2	AD (14)
AD (11)	34	3	AD (10)
AD (9)	35	4	AD (12)
AD (7)	36	5	AD (8)
AD (5)	37	6	AD (6)
AD (3)	38	7	AD (4)
AD (1)	39	8	AD (2)
DA (7)	40	9	AD (0)
DA (5)	41	10	DA (6)
DA (3)	42	11	DA (4)
DA (1)	43	12	DA (2)
ASTB0	44	13	DA (0)
WRITE	45	14	WAITO
INTCX	46	15	READO
RDOSP	47	16	CKMOT
CSEXP	48	17	WROSP
GPI00T	49	18	
STROB	50	19	BUSY1
DACX (7)	51	20	ACK00
DACX (5)	52	21	DACX (6)
DACX (3)	53	22	DACX (4)
DACX (1)	54	23	DACX (2)
IMPRA	55	24	RESUSB
ESTR2	56	25	SELRUS
ESTR1	57	26	SUSPUSB
GND	58	27	PESTR
VCC	59	28	RESE0
VCC	60	29	MEN12
GND	61	30	PIU12
PIU35	62	31	GND



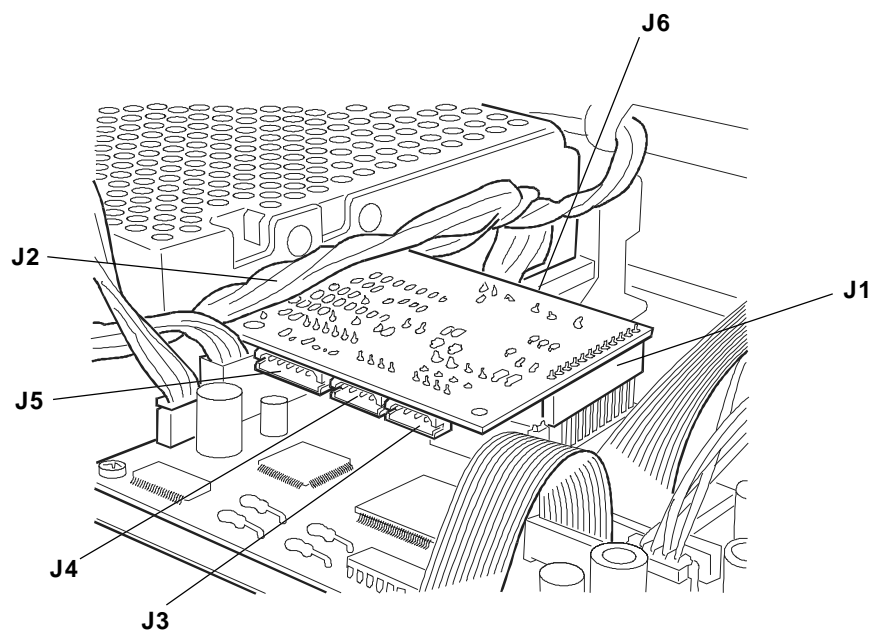
## 6.3 MAGNETIC OPTIONS CARD

The following magnetic options card can be installed on the BAPR2 main board:

- PR2MAGN, for the management of the horizontal magnetic device option

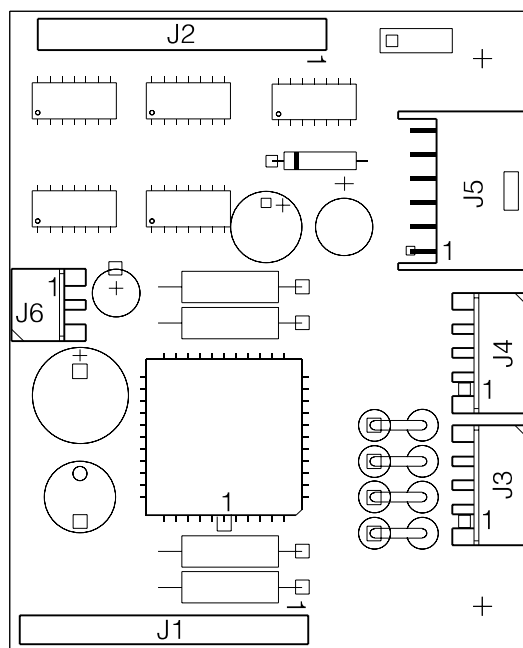
The option installed is controlled by the FW according to the parameters defined during machine setup.

### 6.3.1 CARD LOCATION AND IDENTIFICATION OF CONNECTORS



*Fig. 6-2 Magnetic Options Card*

### 6.3.2 VIEW OF THE PR2MAGN CARD



*Fig. 6-3 PR2MAGN Card*

### 6.3.2.1 PR2MAGN CARD PIN-OUT

#### J1

(CONNECTION TO THE MAIN BOARD)

1	MAC21
2	MAC20
3	MAC11
4	MAC10
5	MAPH2
6	MAPH1
7	PIU35
8	PIU35
9	GND
10	GND

#### J2

(CONNECTION TO THE MAIN BOARD)

1	VCC
2	DAWRM
3	DACOM
4	FAZMA
5	GND
6	VERMA
7	RESE0
8	F2FDA
9	PIU12
10	GND

#### J3

(MAGNETIC DEVICE MOTOR)

1	FAM0
2	FAM1
3	FAM2
4	FAM3

#### J4

(MAGNETIC RESET PHOTO.)

1	VCC
2	VCC
3	LED1
4	FAZZ0

#### J5

(MAGNETIC HEAD)

1	WRI1
2	WRI0
3	GND
4	GND
5	LEO1
6	LEO0

#### J6

(CALIBRATIONS)

1	OUT1
2	GND

## 6.4 SERIAL AND USB INTERFACE CARD

The installation of this interface card provides the printer with an additional serial RS232 and USB interface.

### 6.4.1 CARD VIEW AND LOCATION OF CONNECTORS

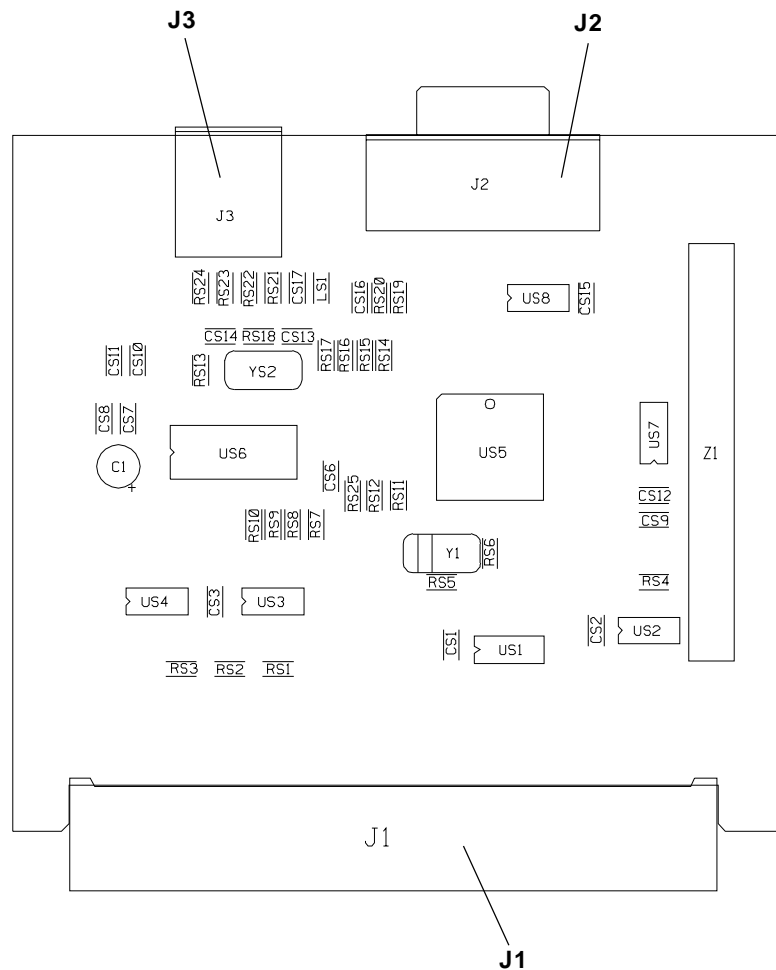


Fig. 6-4 SERIAL and USB Interface Card

## 6.4.2 CONNECTOR PIN-OUT

Provided below is the pinout of the connectors on this interface card.

J2		J2	
(RS232 SERIAL INTERFACE)		(USB INTERFACE)	
1	DCD1	1	VBUS
2	REXD1	2	DMENO
3	TXD1	3	DPIU
4	DTR1	4	GND
5	GND		
6	DSR1		
7	CTS1		
8	TAS01		
9	TERRSE		

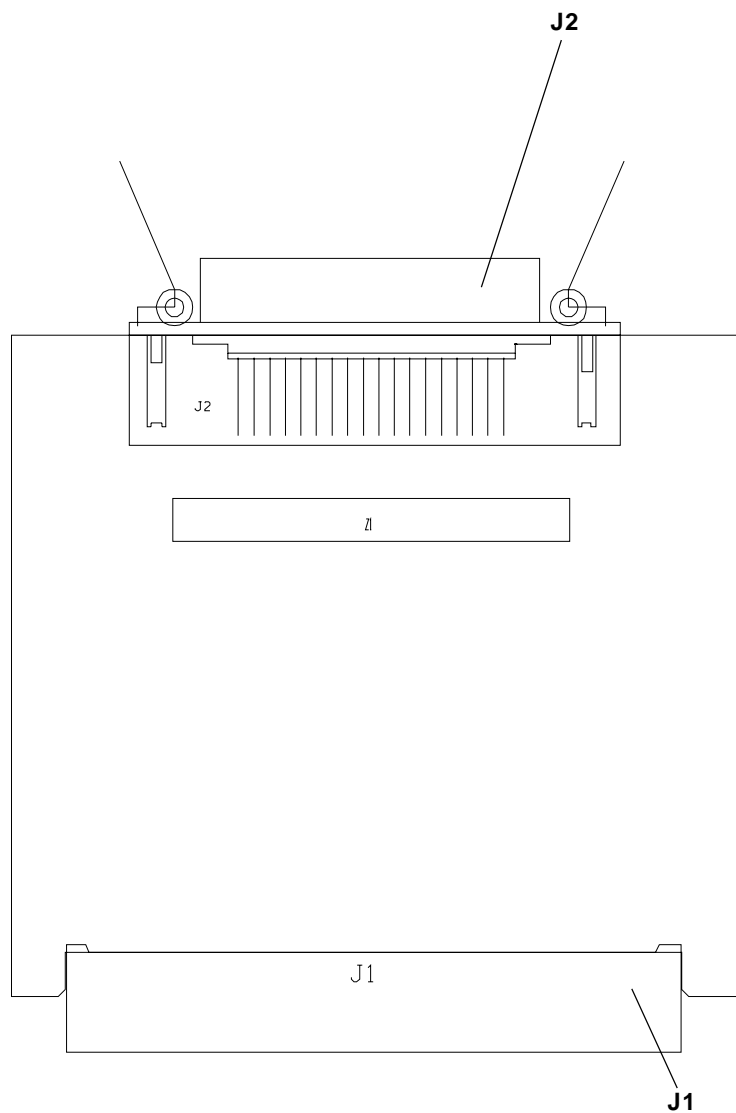
  

J1			
(INTERFACE)			
AD (15)	32	1	GND
AD (13)	33	2	AD (14)
AD (11)	34	3	AD (10)
AD (9)	35	4	AD (12)
AD (7)	36	5	AD (8)
AD (5)	37	6	AD (6)
AD (3)	38	7	AD (4)
AD (1)	39	8	AD (2)
DA (7)	40	9	AD (0)
DA (5)	41	10	DA (6)
DA (3)	42	11	DA (4)
DA (1)	43	12	DA (2)
ASTB0	44	13	DA (0)
WRITE	45	14	WAITO
INTCX	46	15	READO
RDOSP	47	16	CKMOT
CSEXP	48	17	WROSP
GPI00T	49	18	
STROB	50	19	BUSY1
DACX (7)	51	20	ACK00
DACX (5)	52	21	DACX (6)
DACX (3)	53	22	DACX (4)
DACX (1)	54	23	DACX (2)
IMPRA	55	24	RESUSB
ESTR2	56	25	SELRUS
ESTR1	57	26	SUSPUSB
GND	58	27	PESTR
VCC	59	28	RESEO
VCC	60	29	MEN12
GND	61	30	PIU12
PIU35	62	31	GND

## 6.5 PARALLEL INTERFACE CARD

The installation of this interface card provides the printer with a Centronics parallel interface.

### 6.5.1 CARD VIEW AND LOCATION OF CONNECTORS



*Fig. 6-5 Parallel Interface Card*

## 6.5.2 CONNECTOR PIN-OUT

Provided below is the pinout of the connectors on this interface card.

J2			J1		
(PARALLEL INTERFACE)			(MAIN BOARD INTERFACE)		
	19	GND	AD (15)	32	1 GND
STROBX	1 20	GND	AD (13)	33	2 AD (14)
DACXX(0)	2 21	GND	AD (11)	34	3 AD (10)
DACXX(1)	3 22	GND	AD (9)	35	4 AD (12)
DACXX(2)	4 23	GND	AD (7)	36	5 AD (8)
DACXX(3)	5 24	GND	AD (5)	37	6 AD (6)
DACXX(4)	6 25	GND	AD (3)	38	7 AD (4)
DACXX(5)	7 26	GND	AD (1)	39	8 AD (2)
DACXX(6)	8 27	GND	DA (7)	40	9 AD (0)
DACXX(7)	9 28	GND	DA (5)	41	10 DA (6)
ACKX	10 29	GND	DA (3)	42	11 DA (4)
BUSYX	11 30	GND	DA (1)	43	12 DA (2)
PAPEMP	12 31	IMPRA	ASTB0	44	13 DA (0)
SELOUT	13 32	FAULTCX	WRITE	45	14 WAITO
AUTOLF	14 33	GND	INTCX	46	15 READO
-	15 34	-	RDOSP	47	16 CKMOT
GND	16 35	TIR00	CSEXP	48	17 WROSP
TERRCX	17 36	SELINP	GPI00T	49	18
VCC	18 37	TERRCX	STROB	50	19 BUSY1
	38	GND	DACX (7)	51	20 ACK00
			DACX (5)	52	21 DACX (6)
			DACX (3)	53	22 DACX (4)
			DACX (1)	54	23 DACX (2)
			IMPRA	55	24 RESUSB
			ESTR2	56	25 SELRSUS
			ESTR1	57	26 SUSPUSB
			GND	58	27 PESTR
			VCC	59	28 RESEO
			VCC	60	29 MEN12
			GND	61	30 PIU12
			PIU35	62	31 GND

## 6.6 CONSOLE

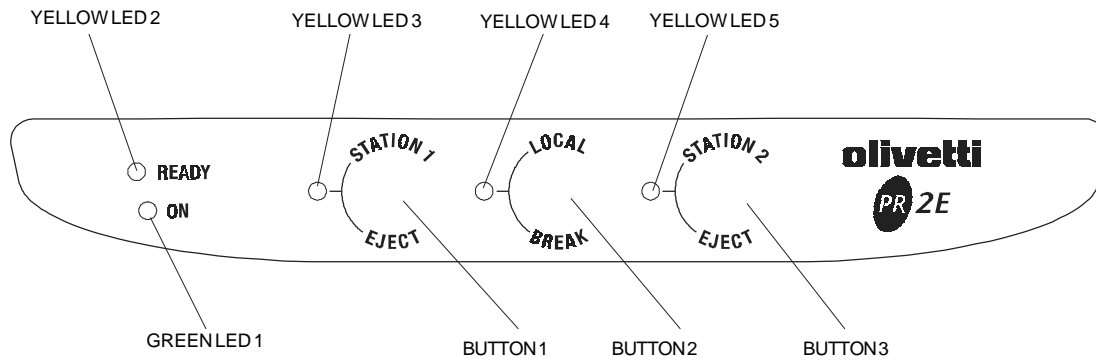


Fig. 6-6 Console

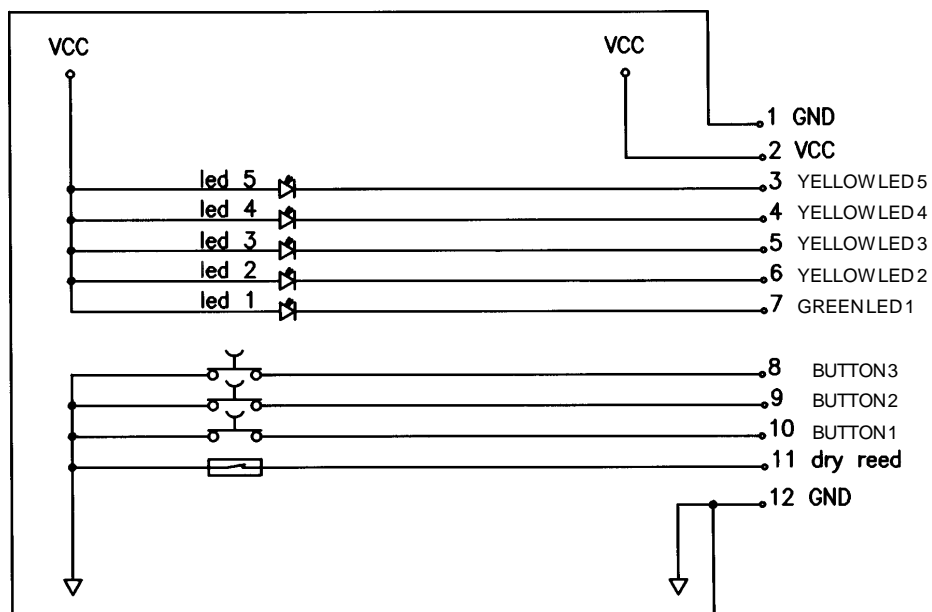


Fig. 6-7 Console Electrical Diagram



## 6.7 ALIPR2E CARD

Two codes can be assigned to the ALIR2 card depending on the line voltage supported (115 V or 230 V). Also the value of fuse F1 varies according to the line voltage.

### 6.7.1 CARD VIEW AND LOCATION OF CONNECTORS

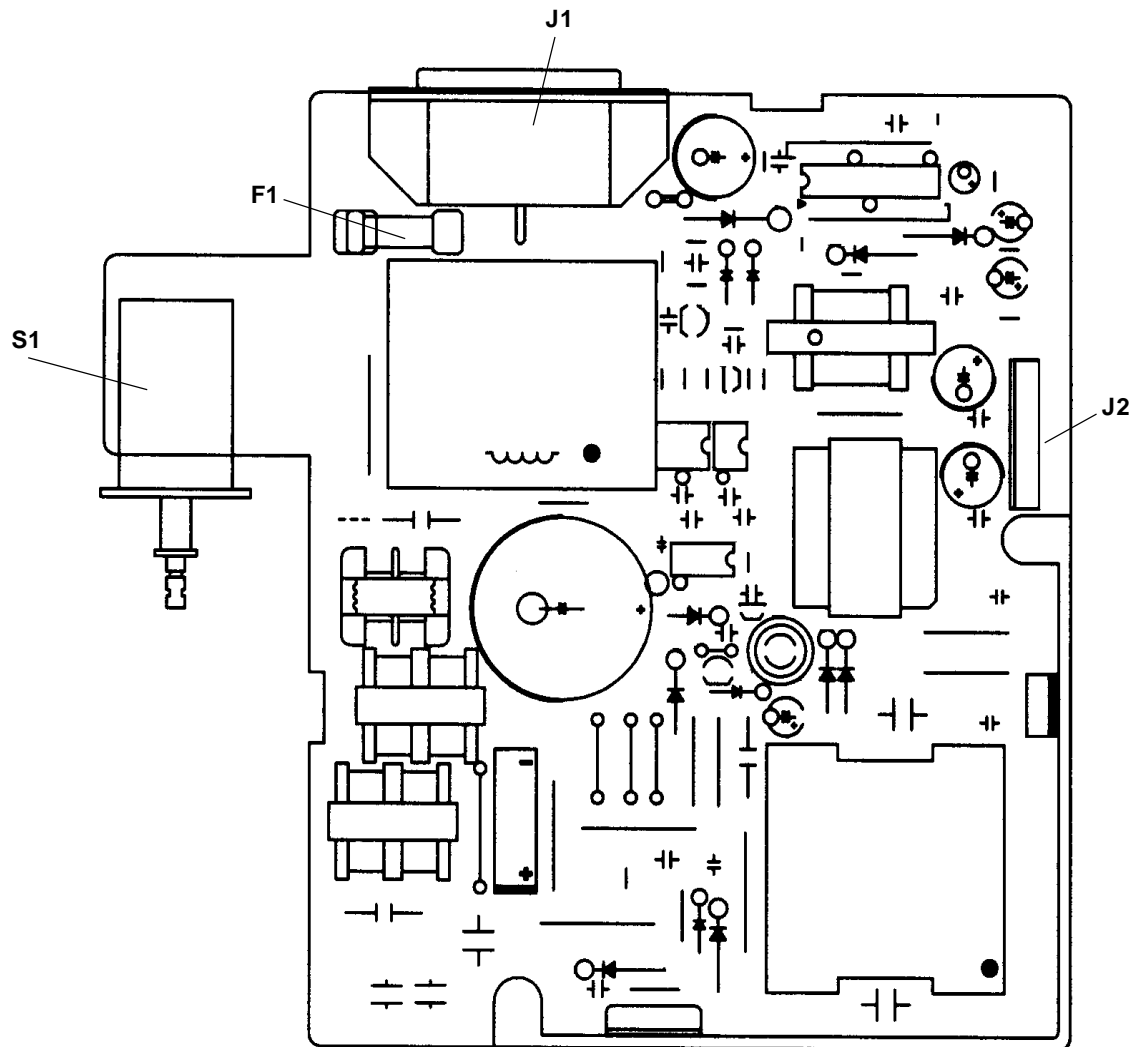


Fig. 6-8 ALIPR2 Card

### 6.7.2 CONNECTOR PIN-OUTS AND FUSE

**J1**  
(EXTERNAL POWER SUPPLY)

1	VAC
2	GND
3	VAC

F1 Fuse: 250V 3.15A

**J2**  
(MAIN BOARD POWER SUPPLY)

1	ROUT
2	-12V
3	+12V
4	+5V
5	GND
6	GND
7	GND
8	35V
9	35V



## **7. PREVENTIVE MAINTENANCE**

### **7.1 CLEANING**

For a correct printer operation, it is suggested that the internal components of the machine be cleaned periodically and whenever the machine is serviced.

#### **7.1.1 CLEANING THE CASE**

Power off the machine, unplug it from the electrical outlet and then clean its case using a damp cloth; avoid using corrosive substances such as solvents, alcohol solutions, petrol or abrasive components.

#### **7.1.2 CLEANING THE PAPER PATHS**

Clean all the document paths including the paper feed rollers of the front paper feeder, making sure to remove any paper or ribbon residues that are deposited on the parts. Also remove any foreign matter.

#### **7.1.3 CLEANING THE MAGNETIC READ HEAD**

Clean using the specific card (code 751498E) provided with the machines equipped with the horizontal magnetic + MICR device.

Cleaning can be performed either automatically or manually by the field engineer.

#### ***AUTOMATIC CLEANING***

By means of a specific SW routine, the system informs the operator that cleaning is necessary and engages in a dummy magnetic transaction.

If not provided by the system, the cleaning instructions are indicated on the cleaning card.

The automatic cleaning procedure is usually performed directly by the operator.

## MANUAL PROCEDURE

This cleaning procedure is performed by the field engineer and is not included in the programmed maintenance scheduled by the automatic procedure.

Also in this case you need to run a system command for a magnetic stripe read operation.

Insert the cleaning card in the front feed slot making sure to position it correctly: the machine will attempt to read the card after which it expels the card and signals an error condition.

Power the machine off and then on again to resume its normal operating status.

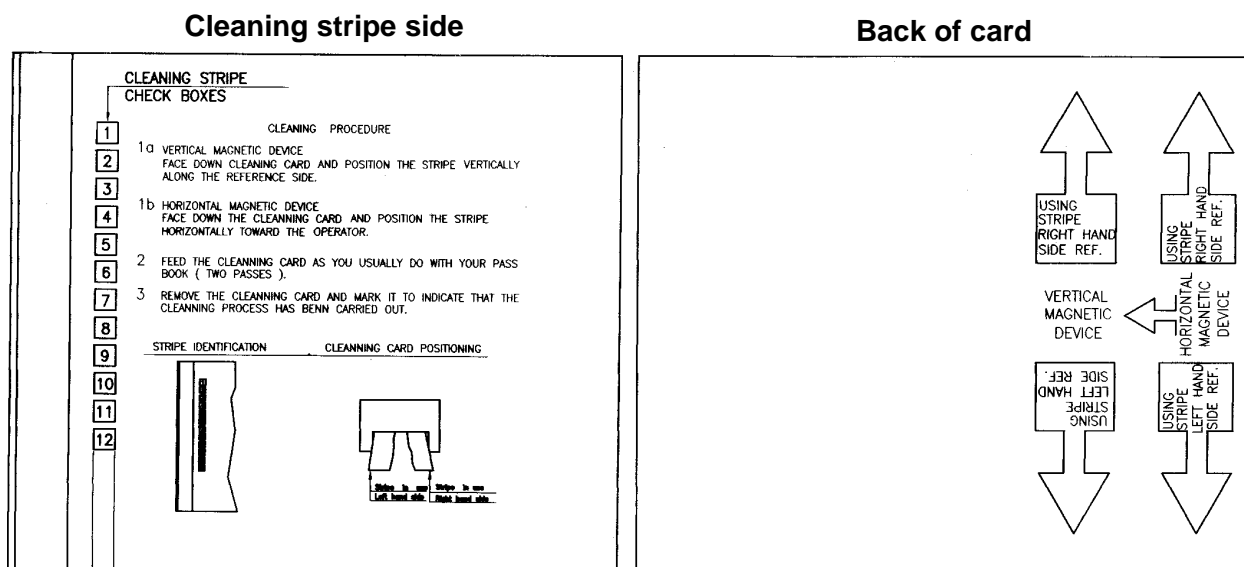


Fig. 7-1 Magnetic Head Cleaning Card

## 7.2 MAINTENANCE

Inside the machine, to the right-hand side, there is a brush which is used to clean the paper edge detection photosensor located behind the printhead. This brush has a life span equivalent to that of the printhead. If, in exceptional cases, the paper photosensor becomes dusty it is suggested that you replace the cleaning brush.

## 7.3 LUBRICATION

Although machine lubrication is not scheduled throughout its entire life span, during each service call you are expected to check the lubrication of the different parts by referring to the lubrication points table indicated below.

### 7.3.1 LUBRICATION POINTS ON THE BASIC MACHINE

DESCRIPTION	CODE	GREASE	OIL
Printhead carriage slide shafts			X
Carriage felt	473150E		X
Ribbon feed gear assy	X		
Cam, in the contact area with:	473072X	X	
reed support pin,	473076T	X	
pressure bridge roller	473074Z	X	
Hole of the contact bushing between roller shaft and strap shaft	473170A	X	
	473171X	X	
Center pressure device in shaft contact area	473167T	X	
Bushings in the shaft contact area	473087P	X	
	474953Y	X	
Motor gear,	473069C	X	
gear	473071W	X	
and cam teeth	473072X	X	
assembly gear	473174S	X	
	473180V	X	
Pulley toothing	473017Q	X	
Hooking area leaf spring	473182K	X	
Ribbon feed rotation pin hole with support pin	473159B	X	
Belt tightener pin with return pulley	473149H	X	
Alignment rollers shaft assy	474987K	X	
in torsion bar contact area	473091K		
in conveyor assy guideway area	473186P		
	474951W		
Rubber in the damper assembly hole	475871K	X	

Grease: Code 150337 M MAGNALUBE - E

Oil: Code 757283 C - FOMBLIN Y 06 oil (perfluorate polyether)  
Supplier: Ausimont, a Montedison group company

DESCRIPTION	CODE	GREASE	OIL
Print crosspiece in the following areas:	395115R	X	
Left pin and ballast	473049G	X	
Guide hole center pin		X	
Pin contact left bracket		X	
Inside the crosspiece adjustment screw holes		X	

### 7.3.2 HORIZONTAL MAGNETIC DEVICE/MICR LUBRICATION POINTS

DESCRIPTION	CODE	GREASE	OIL
Upper carriage slide shaft (with moderation, placing a drop at the sides of the shaft)			X
Return pulley, between pin and roller cage		X	
Door, on rotation pins		X	
Sector gear, on its own pin		X	
Sector-door conical copling gear		X	
Inclined plane of the carriage in the door closing lever control area		X	
Inside the pressure control cam		X	

Grease: Code 150337 M MAGNALUBE - E

Oil: Code 757283 C - FOMBLIN Y 06 oil (perfluorate polyether)  
Supplier: Ausimont, a Montedison group company



## 8. MECHANICAL ADJUSTMENTS

For easier consultation purposes, the mechanical adjustments have been divided into:

- **Machine condition.** Describes the condition that the printer must be in in order to be able to perform a successful adjustment.
- **Objective adjustment.** Indicates the points, values and tolerances to be observed to ensure good kinematic operation.
- **Procedure.** Describes the operations to be performed for the adjustment.
- **Notes.** Indicates any reference to adjustment sequences or to tests to be performed once the adjustment is made.

## 8.1 DOCUMENT FEED BELT ADJUSTMENT

### **MACHINE CONDITION:**

Unimportant.

### **OBJECTIVE ADJUSTMENT:**

The tension of timing belt (1) must sag  $2.9 \pm 2$  mm when applying  $200 \text{ gr} \pm 2 \text{ gr}$  at the center of the lower span.

### **PROCEDURE:**

Loosen the motor securing nuts (2), tighten the belt accordingly and then tighten nuts (1) again.

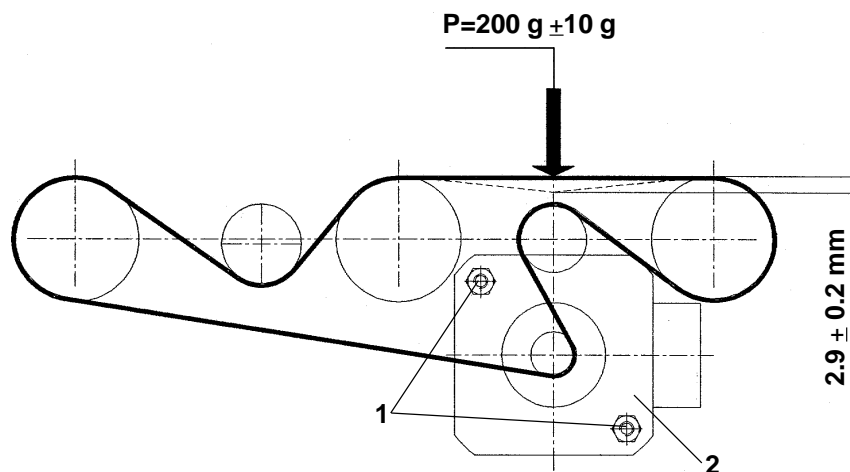


Fig. 8-1



## 8.2 PRINT BAR ADJUSTMENT

### **MACHINE CONDITION:**

Testina di stampa posizionata coassiale con l'asse della vite su cui si compie la regolazione.

### **OBJECTIVE ADJUSTMENT:**

A distance of 0.4/0.5 mm must be measured between the frame's lower shield (1) and the head of screw (2).

### **PROCEDURE:**

While holding the printhead carriage on the axis, adjust screw (2) until measuring the required distance. Repeat this procedure on the other screw located on the opposite side of the frame.

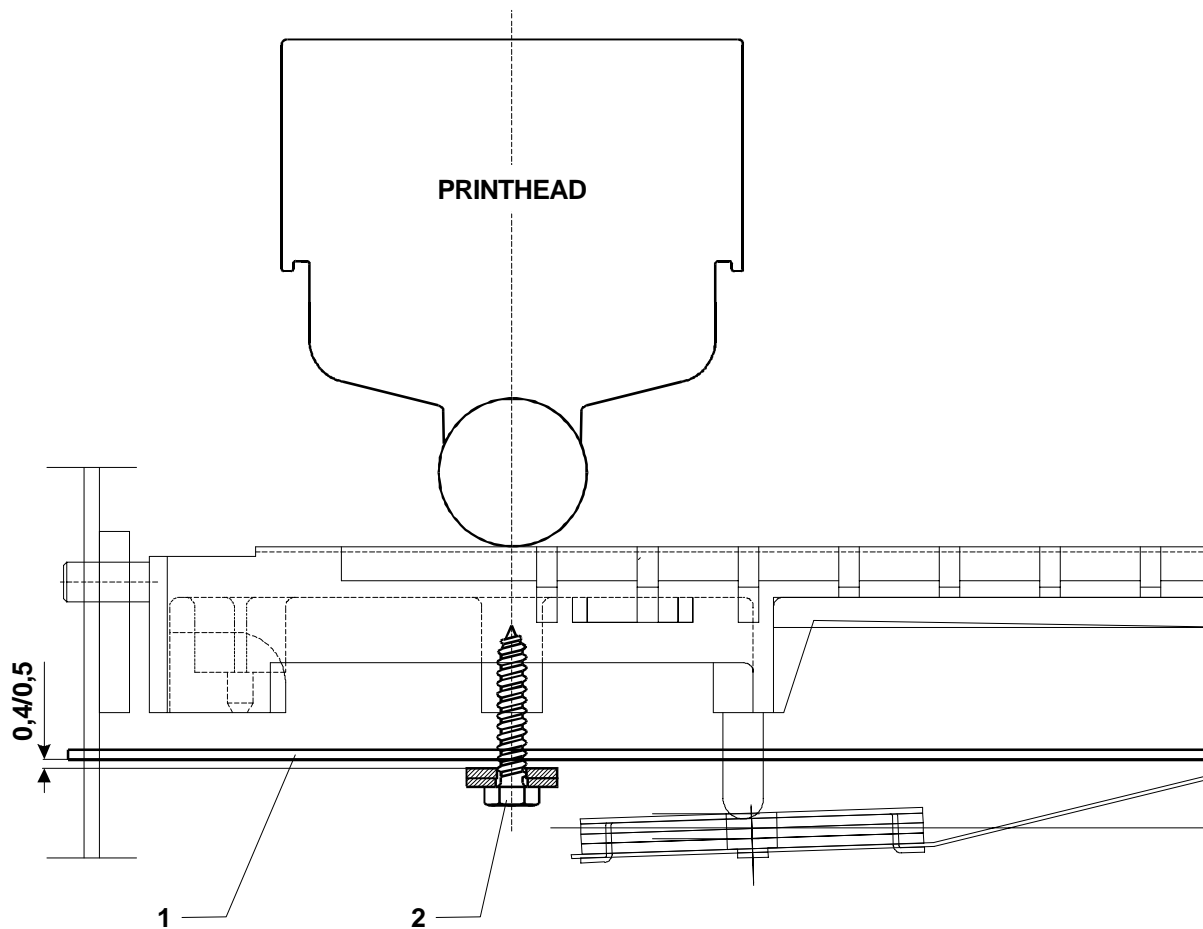


Fig. 8-2

### 8.3 PARALLELISM ADJUSTMENT BETWEEN THE PRINT BAR AND LEAF SPRING LOAD IN THE BASIC MACHINE

#### **MACHINE CONDITION:**

Machine powered off and with the case removed.

#### **OBJECTIVE ADJUSTMENT:**

Parallelism between the print bar and leaf spring load.

#### **PROCEDURE:**

The print bar perpendicularity adjustment lever must be previously adjusted using tool code 9600303 according to drawing code 395130U.

To manually adjust the parallelism between the printhead and print bar, loosen studs (2) and turn counterclockwise to move the print bar closer to the front of the matrix; turn clockwise, instead, to move the bar closer to the rear of the matrix.

You can use parallelism indicator (3) to check whether corrections have been made.

To change the load of the spring leaf, turn adjustment nuts (4).

Move the carriage all the way to the left and, using a comparator, with a dynamometer push the print bar near the probe roller. A displacement of 0.4-0.5 mm must correspond to a load of  $280 \text{ gr} \pm 20 \text{ gr}$ . Repeat this procedure on the right-hand side of the print bar.

When adjustment is complete, secure using securing nuts (5).

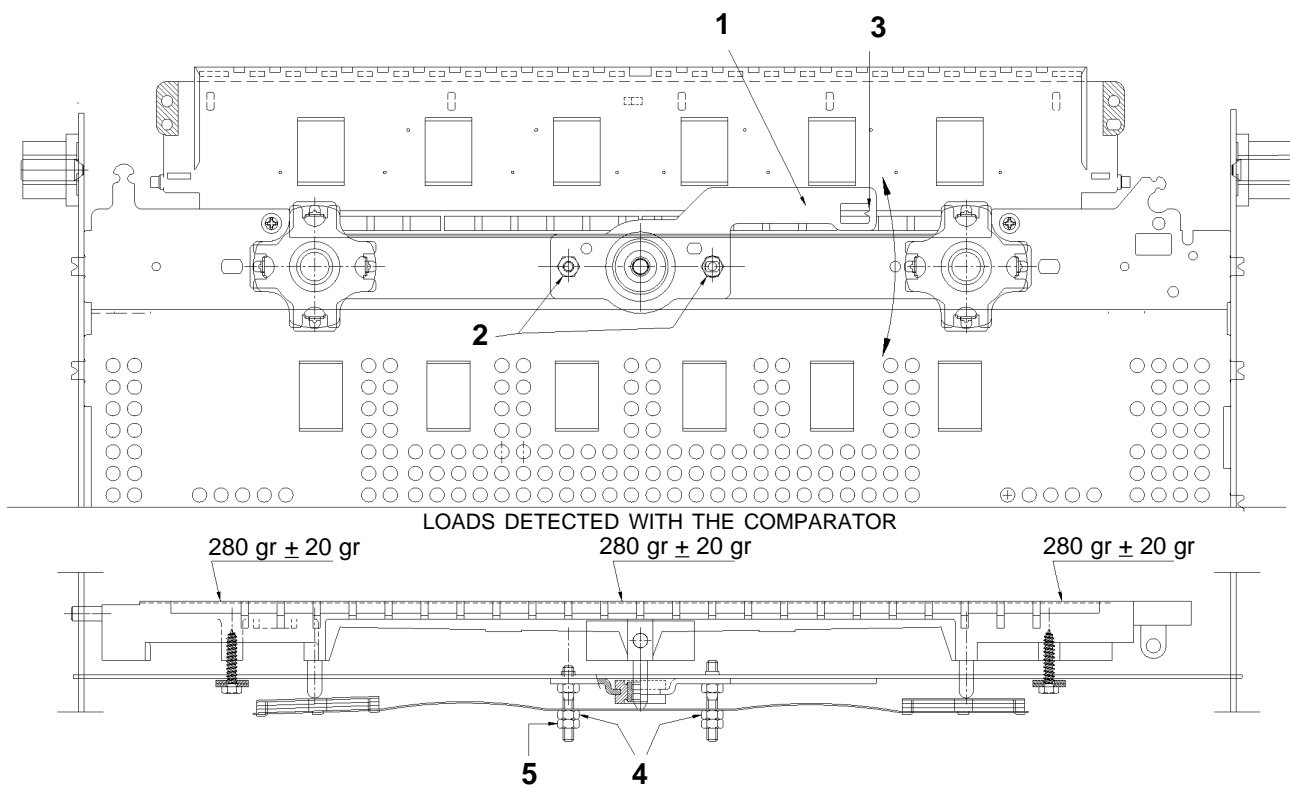


Fig. 8-3

## 8.4 TAB ADJUSTMENT

### **MACHINE CONDITION:**

The upper mechanical assembly must be raised.

### **OBJECTIVE ADJUSTMENT:**

Tab (1) must come into contact with print bar (2), and simultaneously the balancer (3) must come into contact with the tab support shaft (4).

### **PROCEDURE:**

Loosen screw (5) and position the parts as explained. Tighten the screw. When adjustment is complete, make sure that the following conditions are met when clearing the gap between the balancer and knob: the tab must be in contact on the entire paper path or at a maximum distance of 0.5 mm from the platen.

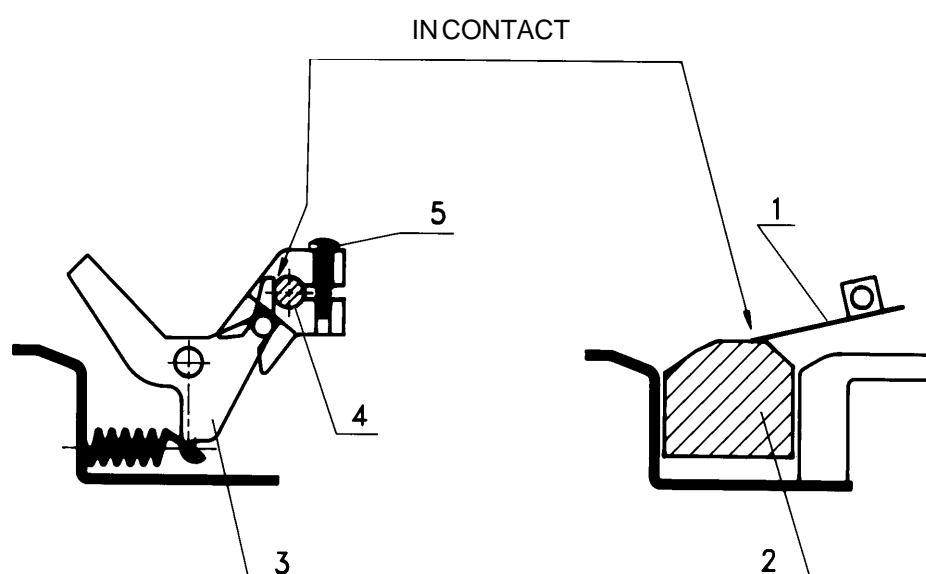


Fig. 8-4

**Note:** Perform this procedure after adjusting the print bar.

## 8.5 FRONT TAB OPENING CHECK

### **MACHINE CONDITION:**

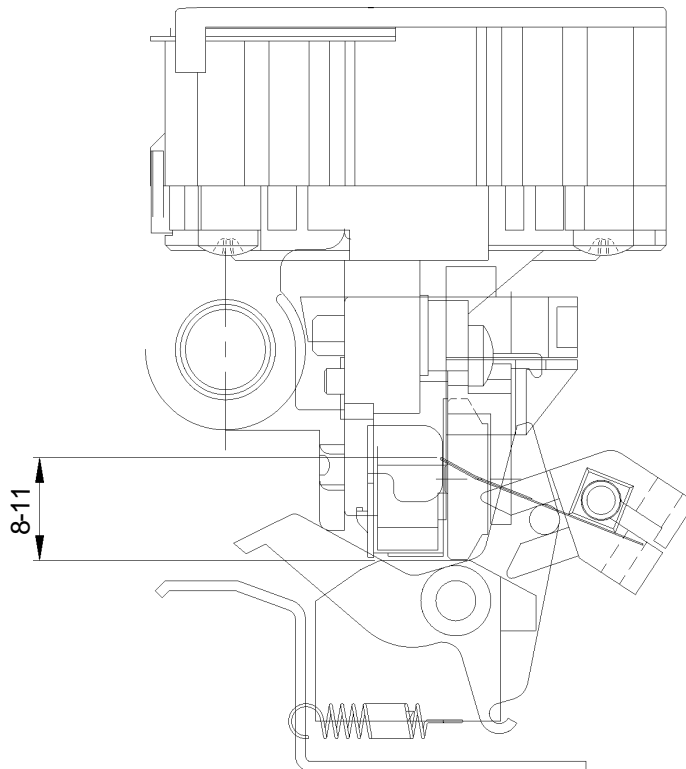
Rear frame assy closed and carriage moved completely to the right.

### **OBJECTIVE ADJUSTMENT:**

Distance between the front tab and print bar.

### **PROCEDURE:**

After making sure that the tab is adjusted correctly (as indicated in the previous section), close the rear frame assy and then move the carriage to the right. Using a probe, check that the point of the tab is located at a distance between 8 and 11 mm from the print bar, measuring at 5-6 cm. from the left edge of the print carriage.



*Fig. 8-5*

## 8.6 ROLLER GEAR ADJUSTMENT

### **MACHINE CONDITION:**

Upper mechanical assembly closed.

### **OBJECTIVE ADJUSTMENT:**

Mesh between cogged wheels (1) and (2) with a maximum radial clearance of 0.2 mm between the teeth.

Check this clearance throughout the entire wheel rotation.

Adjust the two matings on the right-hand side of the printer.

### **PROCEDURE:**

Turn screws (3) that secure the bushing, tightening them with a torque equivalent to  $6 \pm 0.5$  Kgcm.

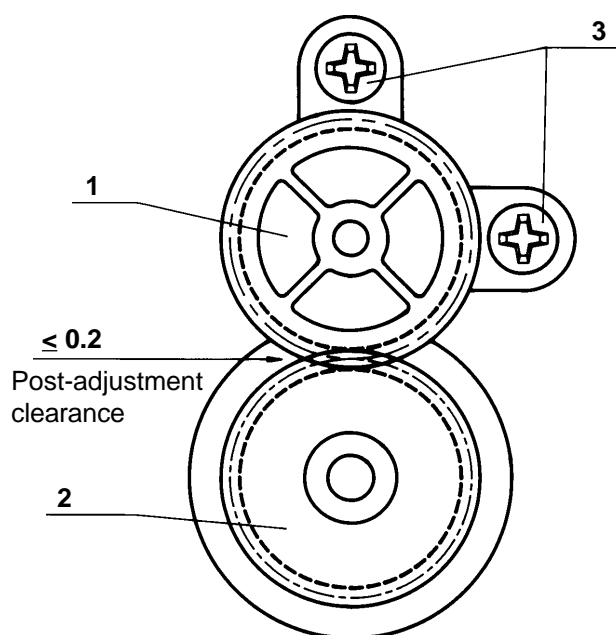


Fig. 8-6

**Note:** Perform this adjustment on both gear pairs on the printer.

## 8.7 FRONT PRESSURE ROLLER ADJUSTMENT

### **MACHINE CONDITION:**

Service cam with its minimum throw area facing the probe roller.

### **OBJECTIVE ADJUSTMENT:**

Make sure that there is a small clearance between the probe roller (7) and the service cam (6).

(To check the correctness of the adjustment remove the probe and, without changing the fase, check for a slight clearance between the roller and cam without loading the springs. There must be no clearance when the probe is inserted again).

### **PROCEDURE:**

Insert an 0.5 mm thick probe (1) between the pressure rollers (5) and the feed rollers (8); by acting on shaft (2), position the three levers (3) so that they come into contact with the springs and then tighten screws (4) with a torque of 20 Kgcm while holding the roller against the cam's smallest radius.

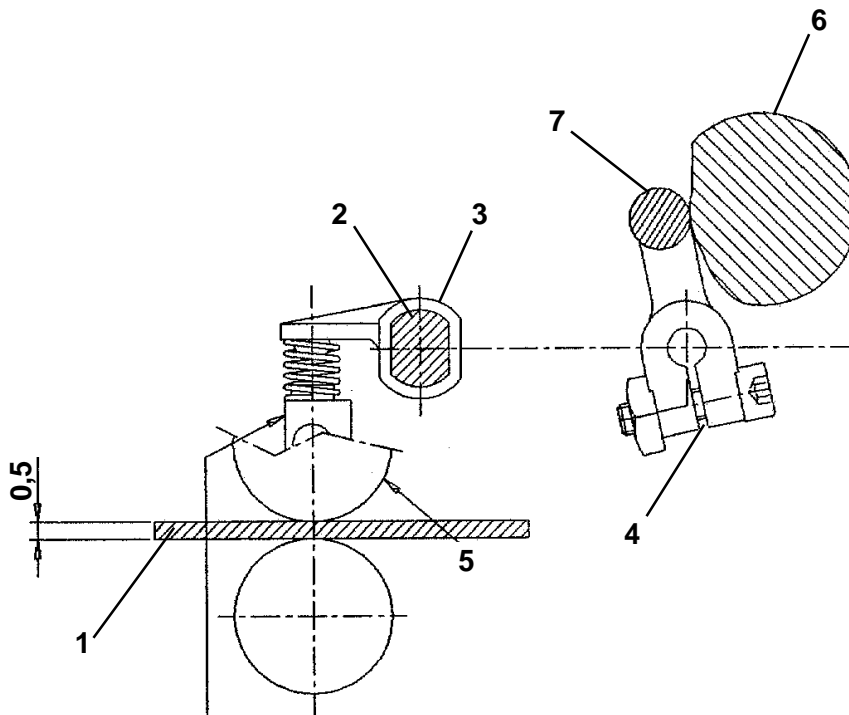


Fig. 8-7

**Note:** The adjustment value can vary for certain non-standard products.

## 8.8 TAB OPENING ADJUSTMENT

### **MACHINE CONDITION:**

With the upper mechanical assembly in its working position and with the printhead carriage against the left side, position and secure lever (1) on the shaft with a clearance of 1.5 mm between the knob and balancer (with respect to the profile of the carriage).

Upper mechanical assembly lifted and lever (1) against the lifting lever control pin (2).

### **OBJECTIVE ADJUSTMENT:**

A distance of between 5 and 8 mm between the edge of the tab (3) and the center of the print bar.

### **PROCEDURE:**

Turn screw (4) that secures lever (1) on the tab shaft.

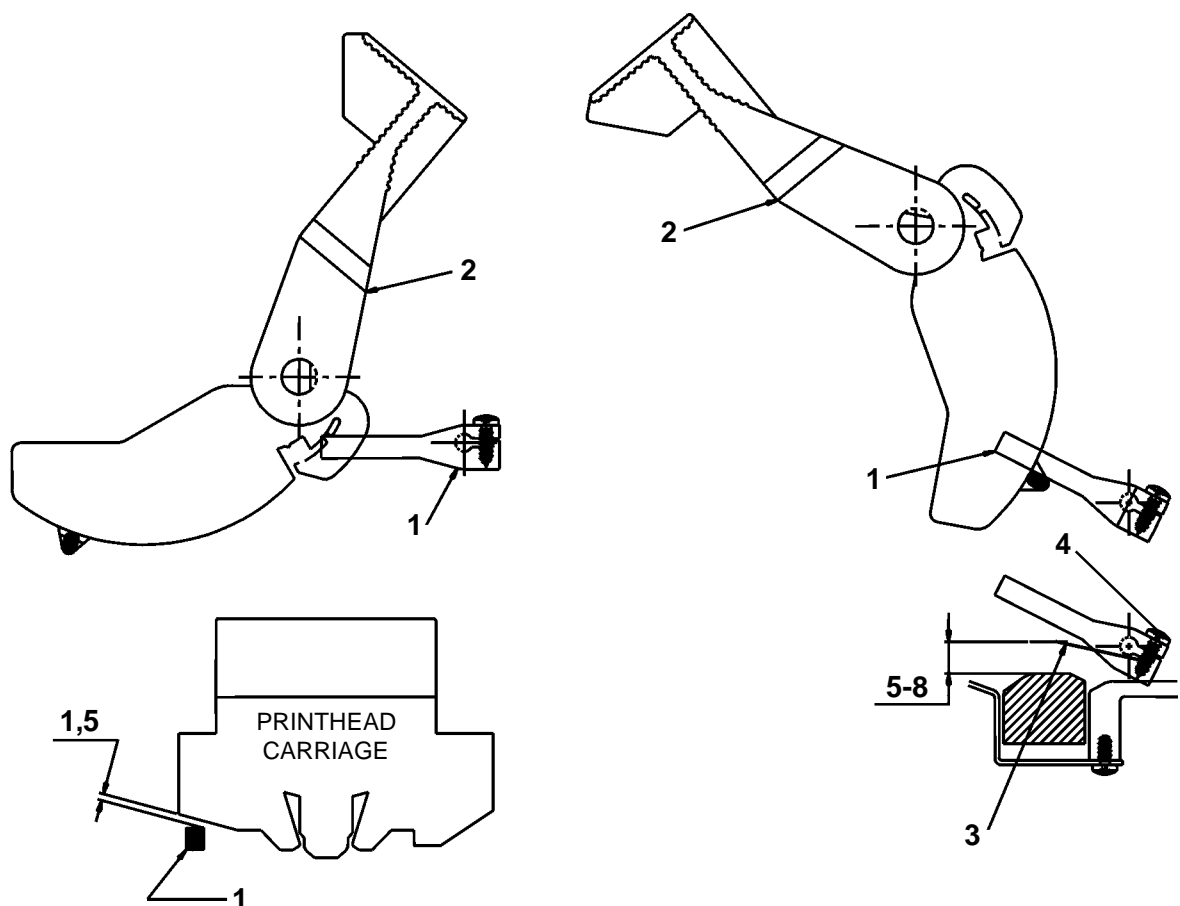


Fig. 8-8

**Note:** This adjustment must be performed after the platen and tab adjustments.

## 8.9 HORIZONTAL MAGNETIC DEVICE/MICR OPTION CARRIAGE FEED BELT TENSION ADJUSTMENT

### **MACHINE CONDITION:**

Read/write carriage in its reset position (end-of-stroke at the motor side).

### **OBJECTIVE ADJUSTMENT:**

The tension of timing belt (1) so that a 5 mm sag is obtained when a force of 60 gr. is applied at the center of the carriage. Measure with the carriage in its reset position (left-hand end-of-stroke - motor end).

### **PROCEDURE:**

Loosen the securing screws and then move motor (2) until the objective adjustment is reached; tighten the screws again.

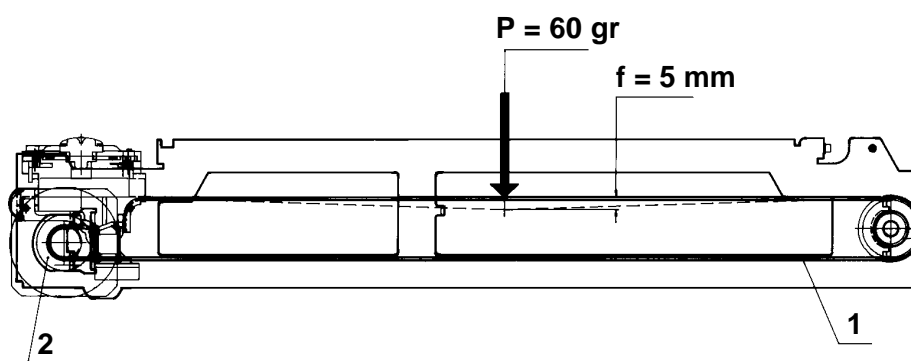


Fig. 8-9



## 8.10 HORIZONTAL MAGNETIC DEVICE/MICR DOOR ADJUSTMENT

### **MACHINE CONDITION:**

Read/write carriage at its reset position (end-of-stroke at motor side) and semi-tie rod joining screw (1) loose.

### **OBJECTIVE ADJUSTMENT:**

Coplanarity between the door and the front surface of the frame.

### **PROCEDURE:**

Fit the door (2) against the slot (3), working in the area between the leaf spring and the semi-tie rod tooth (4); tighten the screw.

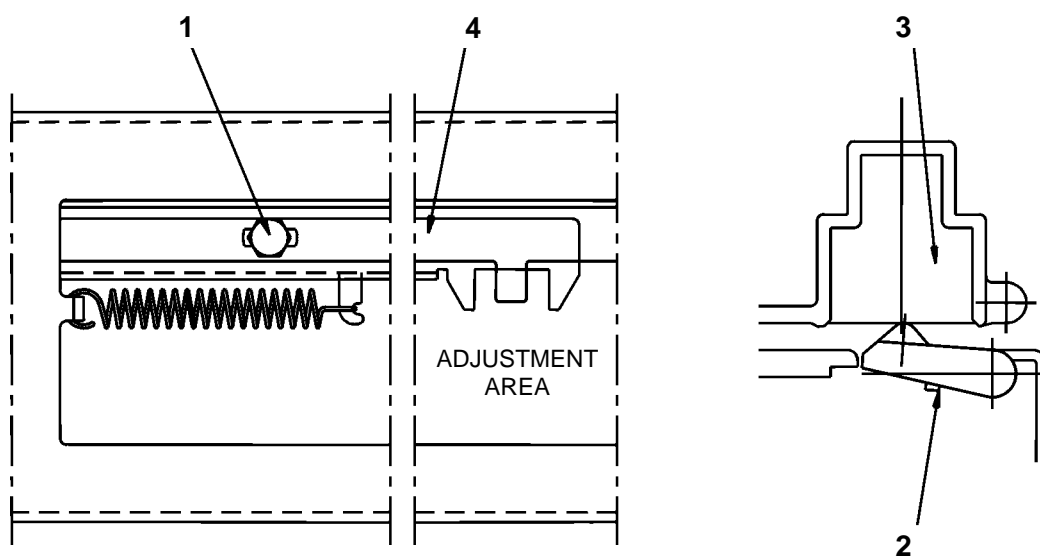


Fig. 8-10

## 8.11 HORIZONTAL MAGNETIC DEVICE/MICR PRESS POSITIONING

### **MACHINE CONDITION:**

Cam crank (4) against the shortest cam radius.

Position press (1) inside conveyor (2) with an indent of 0.5-1 mm and then phase cam (3) so as to move cam crank (4) against its shortest radius. Secure the cam crank on the shaft with its screw (5). Make sure that the press is indented throughout the entire paper path).

### **OBJECTIVE ADJUSTMENT:**

Press in into working position.

### **PROCEDURE:**

Rotate the cam until the cam crank (4) moves against its maximum radius; then, with the press resting on the paper feed surface, check for a clearance in the joint at point "A".

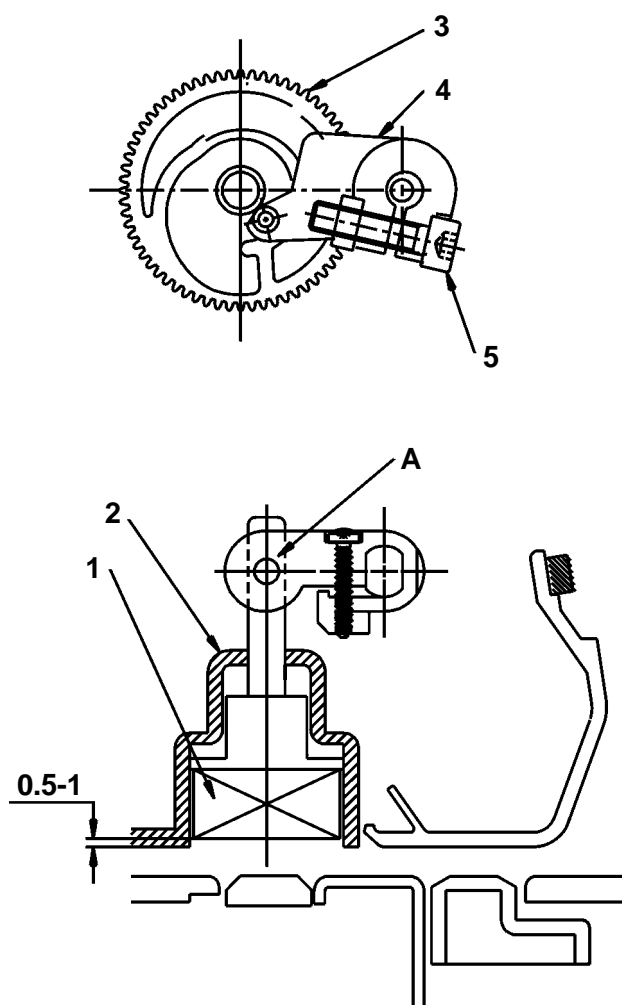


Fig. 8-11

## 8.12 POSITIONING THE ASSEMBLY ON THE HORIZONTAL MAGNETIC DEVICE/ MICR

### **MACHINE CONDITION:**

Unimportant.

### **OBJECTIVE ADJUSTMENT:**

Coplanarity between the magnetic device door and the slot paper conveyor.

### **PROCEDURE:**

Hook slots (1) on the sides of the magnetic device frame onto pins (2) on the sides of the machine.  
Insert the securing screws (3).

Push the magnetic device frame upward until it rests against the paper conveyor on both right- and left-hand sides.

Tighten the screws with a torque of 8 Kgcm.

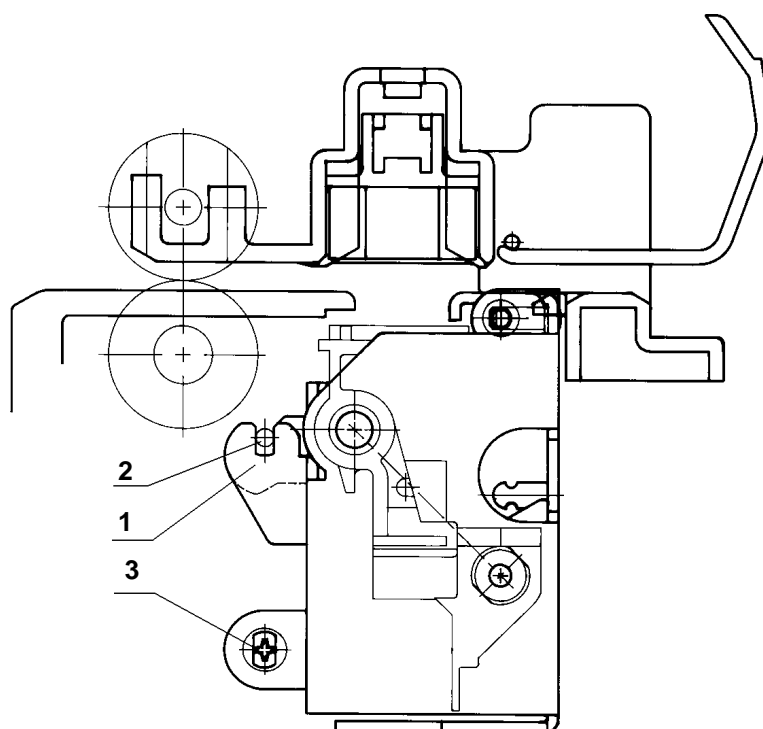


Fig. 8-12



## 9. DISASSEMBLY/REASSEMBLY PROCEDURES

For easier consultation, the disassembly procedures have been divided as follows:

- **9.2.X** disassembly of the basic machine, with no option installed
- **9.3.X** disassembly of the basic machine's horizontal magnetic device /MICR

Each individual disassembly procedure is described in the following way:

- **Wherever possible, reference is made to previous disassembly procedures**, so as to give a backward glance at the disassembly that comes prior to the one described.
- **Operation steps** described in sequence.
- **Notes:** recall adjustments that need to be made after reassembly, precautions or warnings to be observed.

## **9.1 GENERAL DISASSEMBLY/REASSEMBLY PRECAUTIONS**

- To ensure maximum safety, before starting any disassembly operation power off the printer and unplug its power cord from the electrical outlet.
- All operations should be performed in a clean and uncluttered area.
- Follow the procedures carefully; do not unscrew parts that are not to be disassembled.
- Store the disassembled parts in a clean place where there is no danger of them getting lost.
- After replacing the parts, make sure that they have not been deformed during assembly; restore the correct conditions if necessary.
- Reassembly must be performed by following the disassembly procedures in reverse order.
- Before disconnecting the cables make sure to take note of their connections for reassembly.
- After servicing, lubricate where specified.
- When replacing the main board, update the firmware to the latest release (section 1.9.1), run the installation set-up (Chapter 4) and then perform the electromechanical adjustments from the console (Chapter 4).
- When replacing the power supply assembly, make sure that the line voltage rating of the replacement module corresponds to the value indicated on the printer's electrical data plate.
- At the end of the service call, run an overall check on the printer to make sure that all failures are corrected.

## 9.2 DISASSEMBLY/REASSEMBLY OF THE BASIC MACHINE

### 9.2.1 CASE DISASSEMBLY/REASSEMBLY

- Open the printer's top cover.
- Remove the two securing screws (1) from the front of the case (2). Remove this front part of the case from the machine by pulling it in the direction of the arrows in the figure below.
- Using a flat-blade screwdriver, release the case's two front snap features (3).
- Insert a pointed object in the holes at the rear right and left sides of the case and then release the two rear snap features (4); partly lift the case off the base.
- Release the console from the case by pressing gently in the points indicated by the arrows in the figure below and lifting it upward.
- Pass the console through the flat cable passage slot and remove the case from the machine.

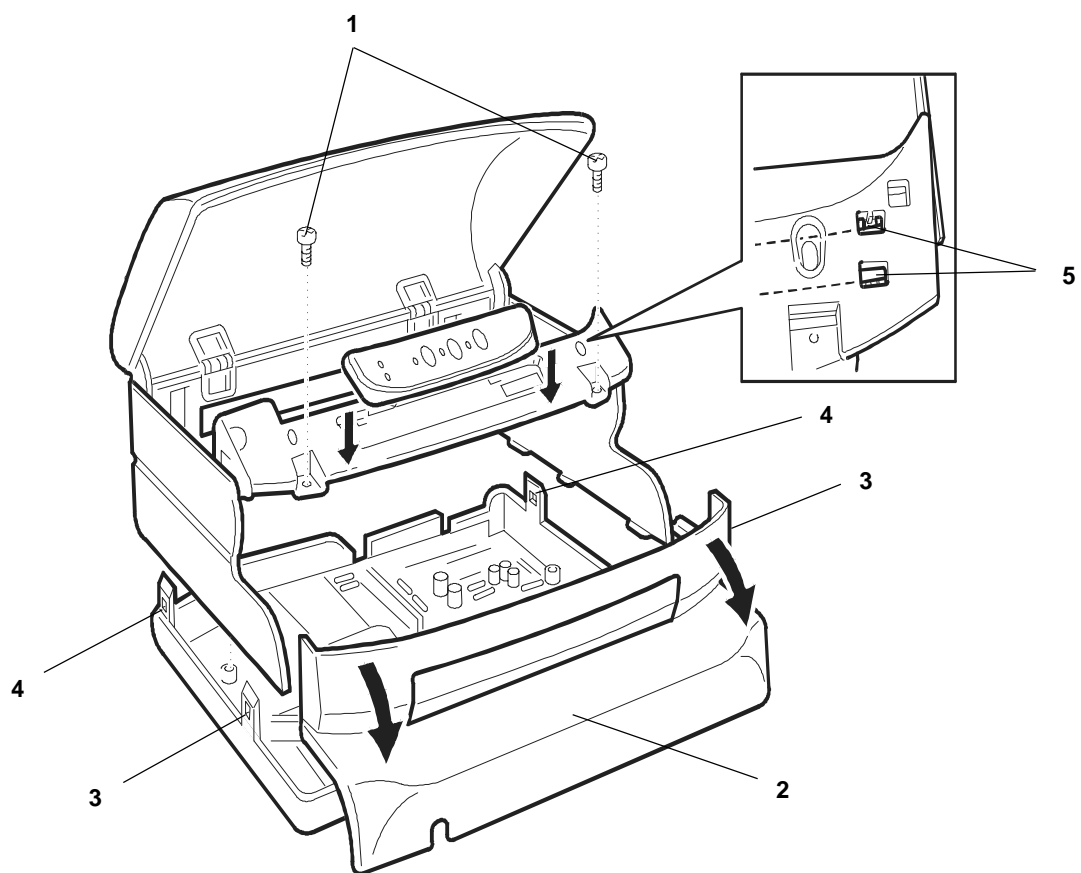


Fig. 9-1

**Note:** During the reassembly of the case, secure the console flat cable with the guide tabs (5) located at the rear of the console panel.

### 9.2.2 CONSOLE DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1).
- Loosen screws (1) and turn sideways the securing plates of the mechanical assembly rubber stops so as to release the front of the mechanical assembly from their slots.
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach console connector (2) on the main board.
- Remove the board's protection.
- Remove the console by unplugging its flat cable connector from the main board (2) and then releasing the flat cable from its securing tabs (3) on the base.

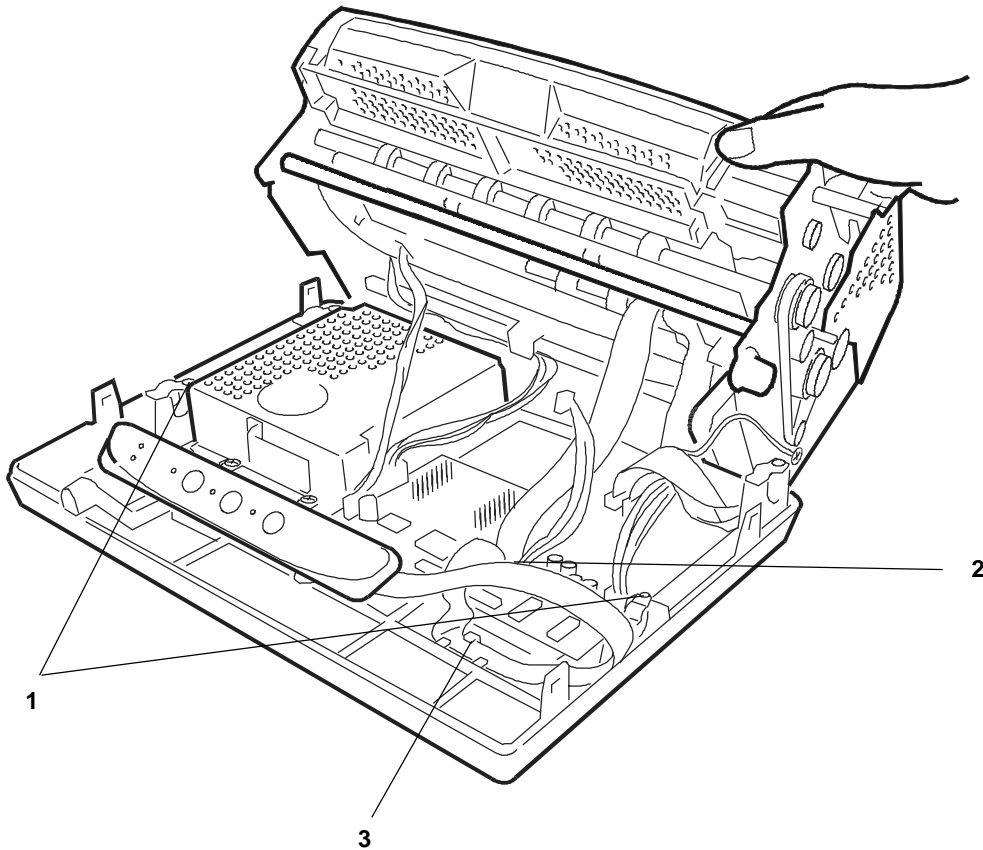
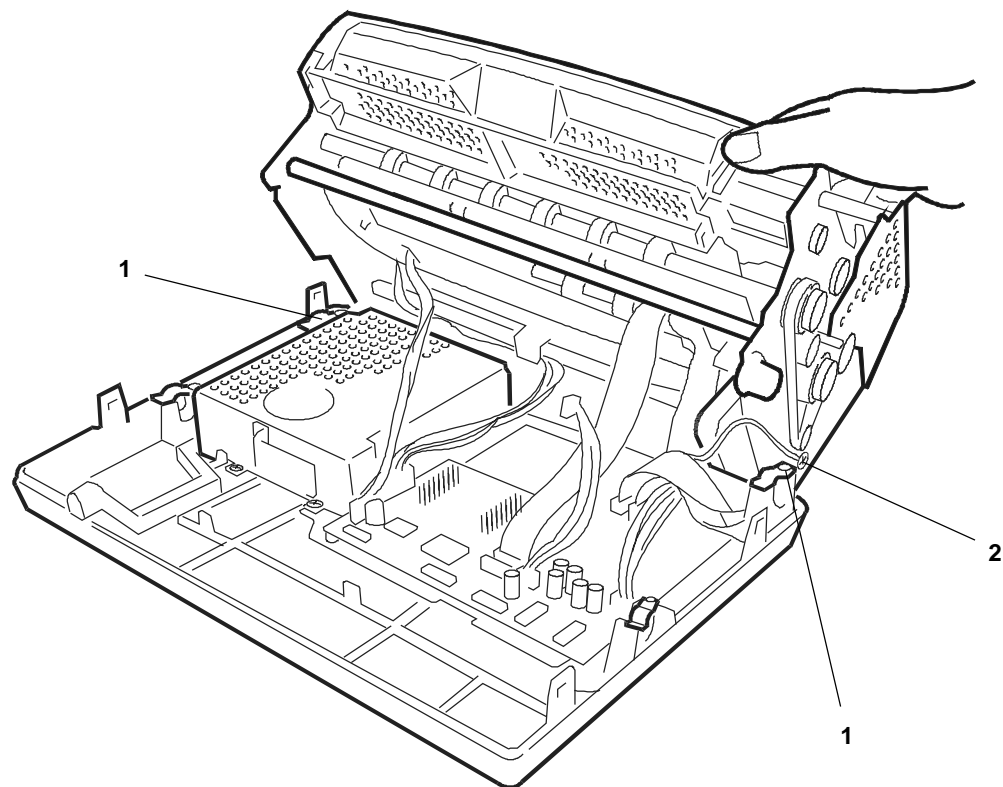


Fig. 9-2



### 9.2.3 MECHANICAL ASSEMBLY DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1) and console (section 9.2.2).
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board.
- Unplug all the cables connecting the mechanical assembly to the main board, with the exception of the main board-to-power supply unit connection cable.
- Loosen screws (1) of the plates that secure the assembly's rear rubber stoppers so that the entire mechanical assembly is released.
- Remove screw (2) that secures the ground wires.
- Lift the entire mechanical assembly from the base of the printer.



*Fig. 9-3*

#### 9.2.4 PRINthead FLAT CABLE DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1).
- Free the cable clip (1) located on the right-hand side of the frame by unhooking it from the inside (2) of the frame itself.
- Remove the soundproofing (3).
- Loosen screw (4) that secures the rear cable fastener, rotate the fastener and then free the flat cables.
- Rotate the flat cable support (5) connected to the printhead upwards as far as it goes.
- Remove the mylar sheet (6) from underneath the flat cable support, then free the flat cables from their securing tabs on the support.

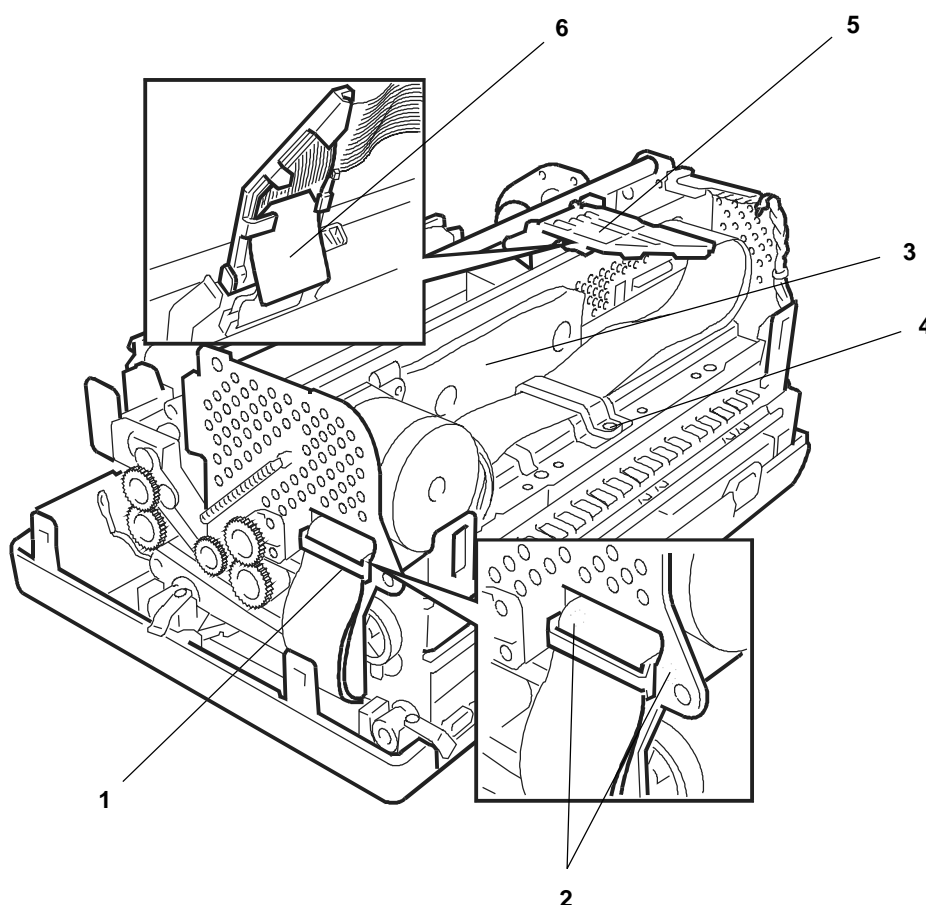
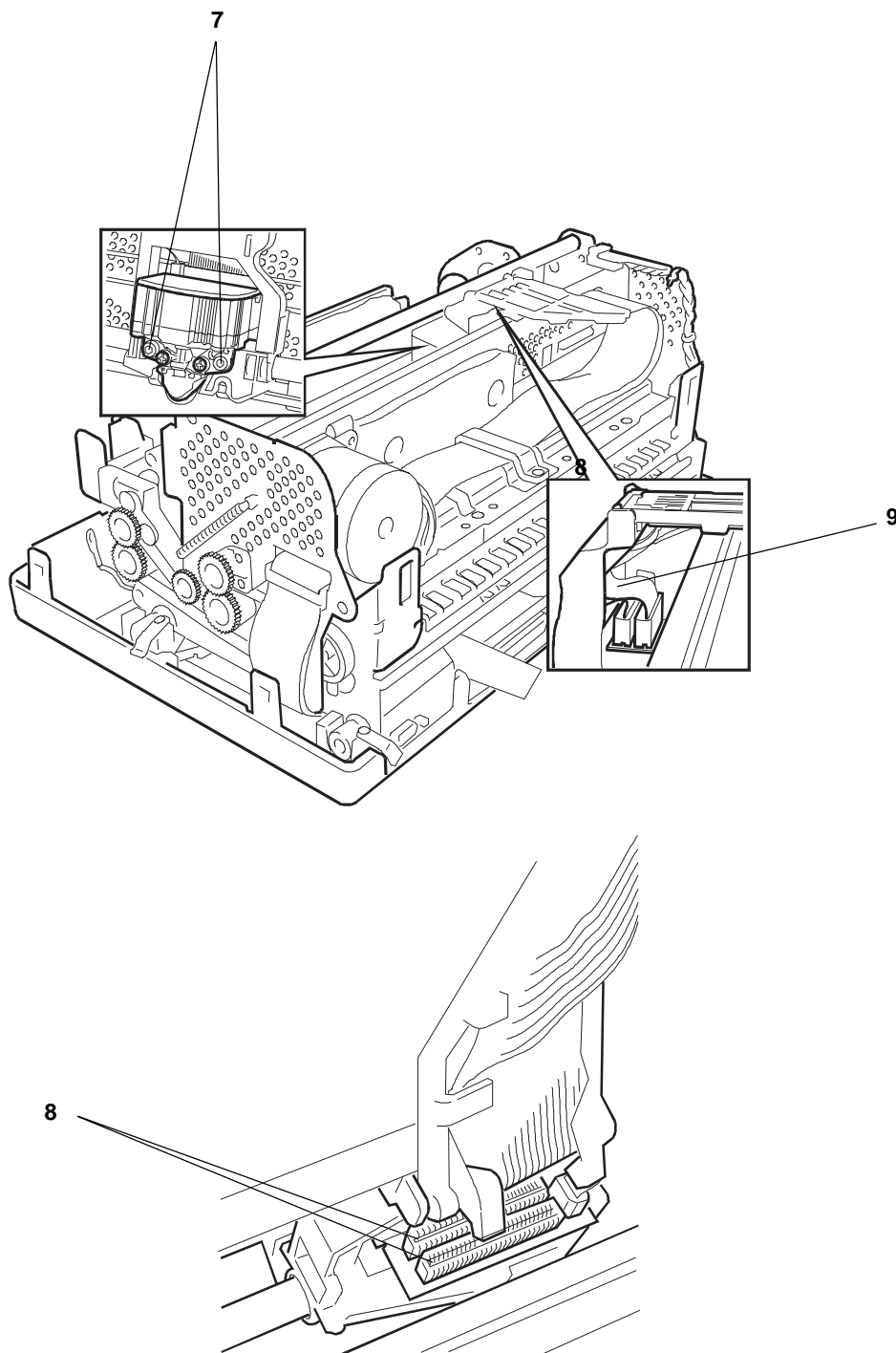


Fig. 9-4

- Remove the printhead by unscrewing the two screws (7).
- Unplug the two flat cables from their connectors (8) on the printhead.

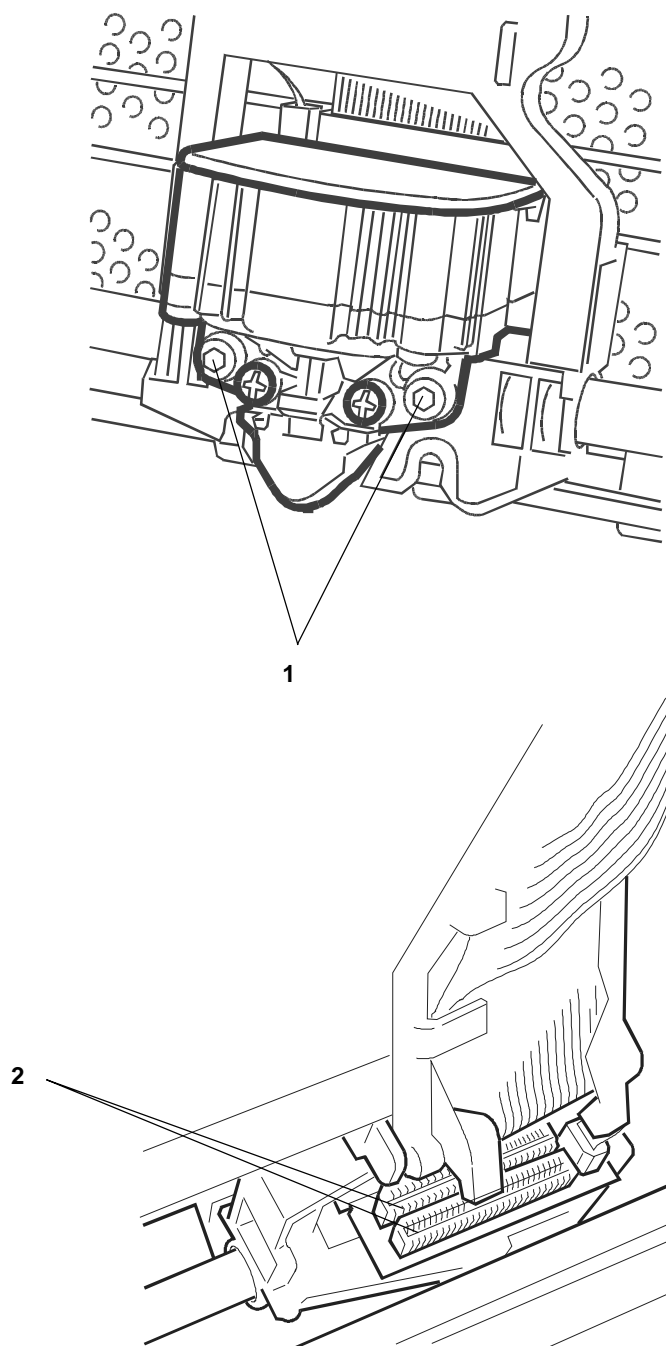


*Fig. 9-5*

**Warning:** When reconnecting the flat cables to the printhead, make sure to restore the correct cable route (9) as indicated in the figure so that the cables do not interfere with the ribbon rewind gears; if the correct route is not restored the cables could become seriously damaged during machine operation.

### 9.2.5 PRINthead DISASSEMBLY/REASSEMBLY

- Open the printer cover and lift the mechanical assembly.
- Remove the ribbon cartridge.
- Unscrew the two screws (1) that secure the printhead.
- Partly slide off the printhead from the carriage and unplug the two flat cables (2) from the connectors on the printhead.

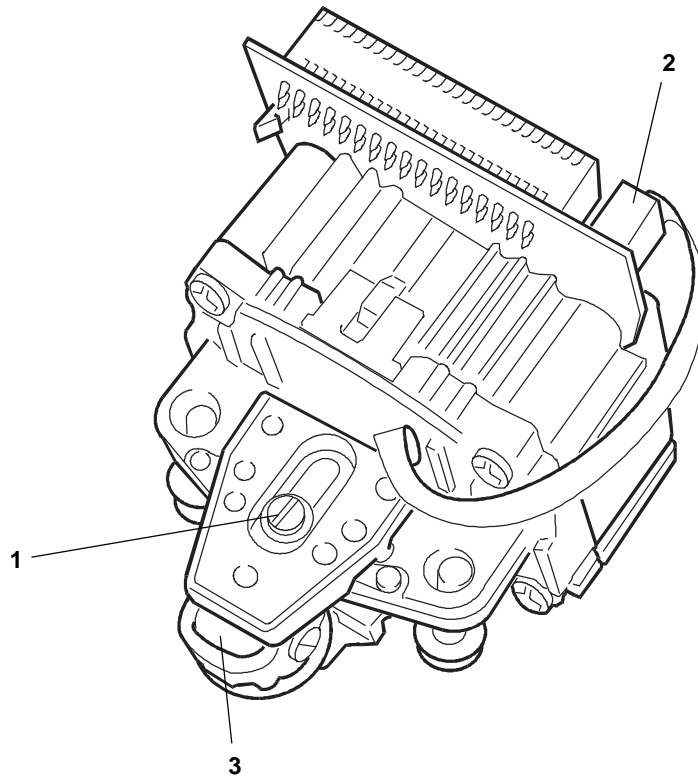


*Fig. 9-6*

**Note:** After printhead reassembly, calibrate the printhead photosensor.

### 9.2.6 PRINTHEAD PHOTOSENSOR DISASSEMBLY/REASSEMBLY

- Remove the printhead (section 9.2.5).
- Remove screw (1) that secures the printhead photosensor and remove the photosensor from its seat.
- Unplug the photosensor flat cable from its connector (2) on the printhead.
- Replace the old photosensor with the new one, making sure that it rests against support shield (3);; replace and tighten the securing screw (1).

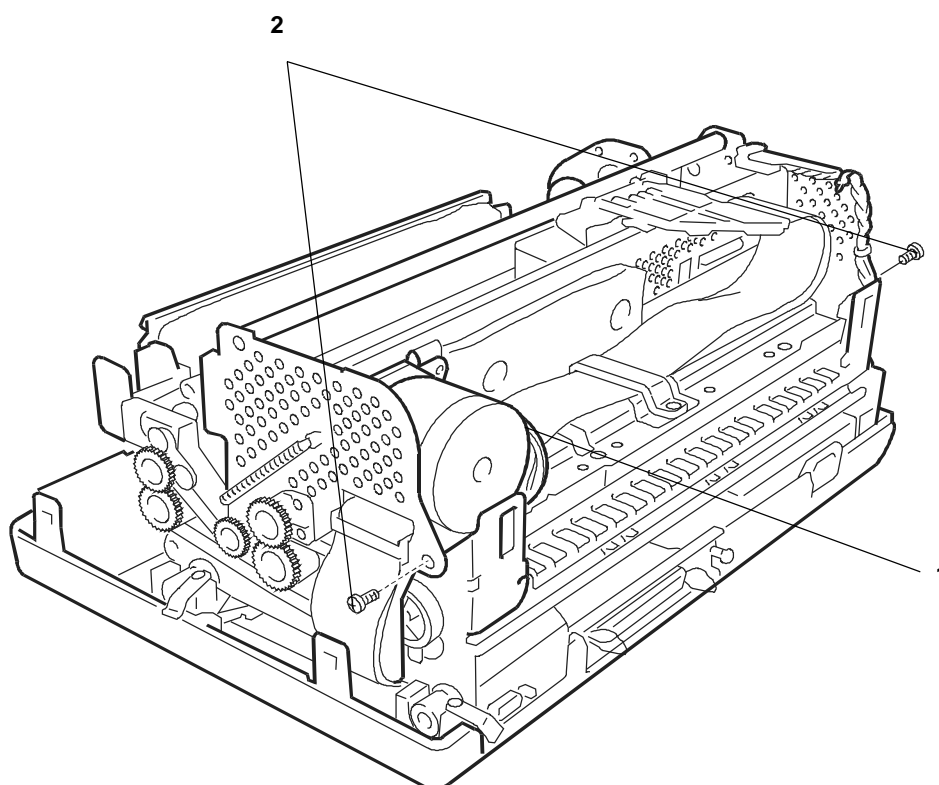


*Fig. 9-7*

**Note:** The printhead photosensor must be calibrated whenever the printhead is replaced.

### 9.2.7 UPPER PART OF THE MECHANICAL ASSEMBLY DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1) and console (section 9.2.2).
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board.
- Unplug the printhead and carriage reset photosensor cables from the main board. Free the carriage reset photosensor wires from its plastic retainers.
- Unplug connector (1) from the carriage transport motor.
- Raise the upper part of the mechanical assembly using the specific lever.
- Remove the two rear side screws (2) so as to detach the upper part of the mechanical assembly.

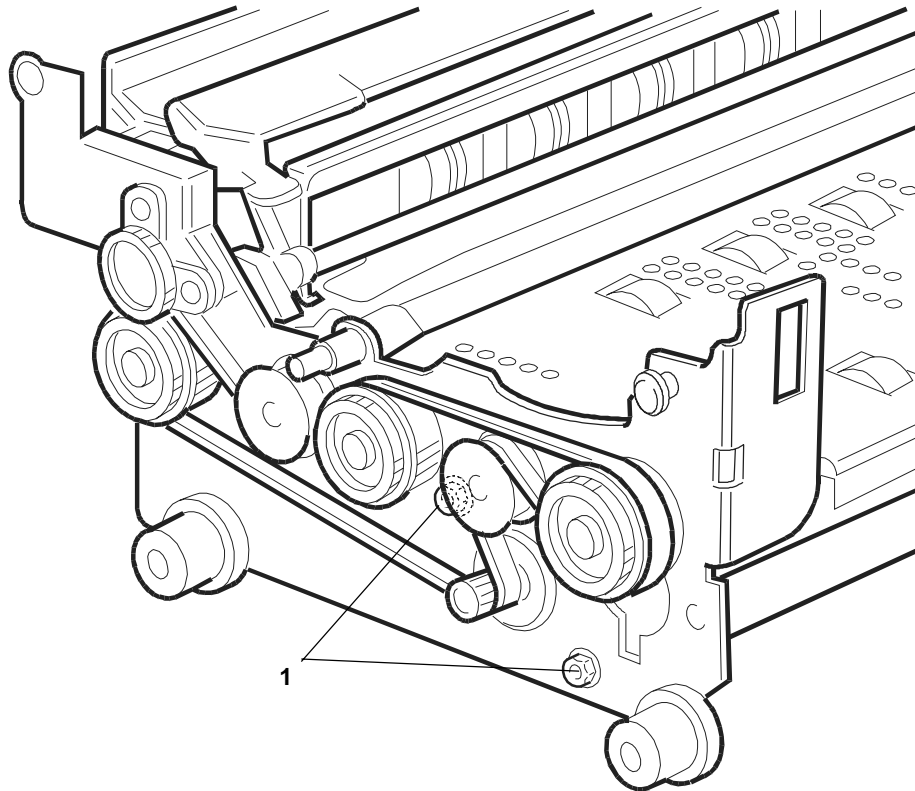


*Fig. 9-8*

**Note:** During reassembly, make sure to route the cables through the appropriate slots and check the adjustment of the roller gears (section 8.1.7).

## 9.2.8 PAPER FEED MOTOR DISASSEMBLY/REASSEMBLY

- Remove the mechanical assembly (section 9.2.3)
- Loosen the two nuts (1) that secure the motor and then release the document feed belt.
- Remove the nuts and extract the motor.

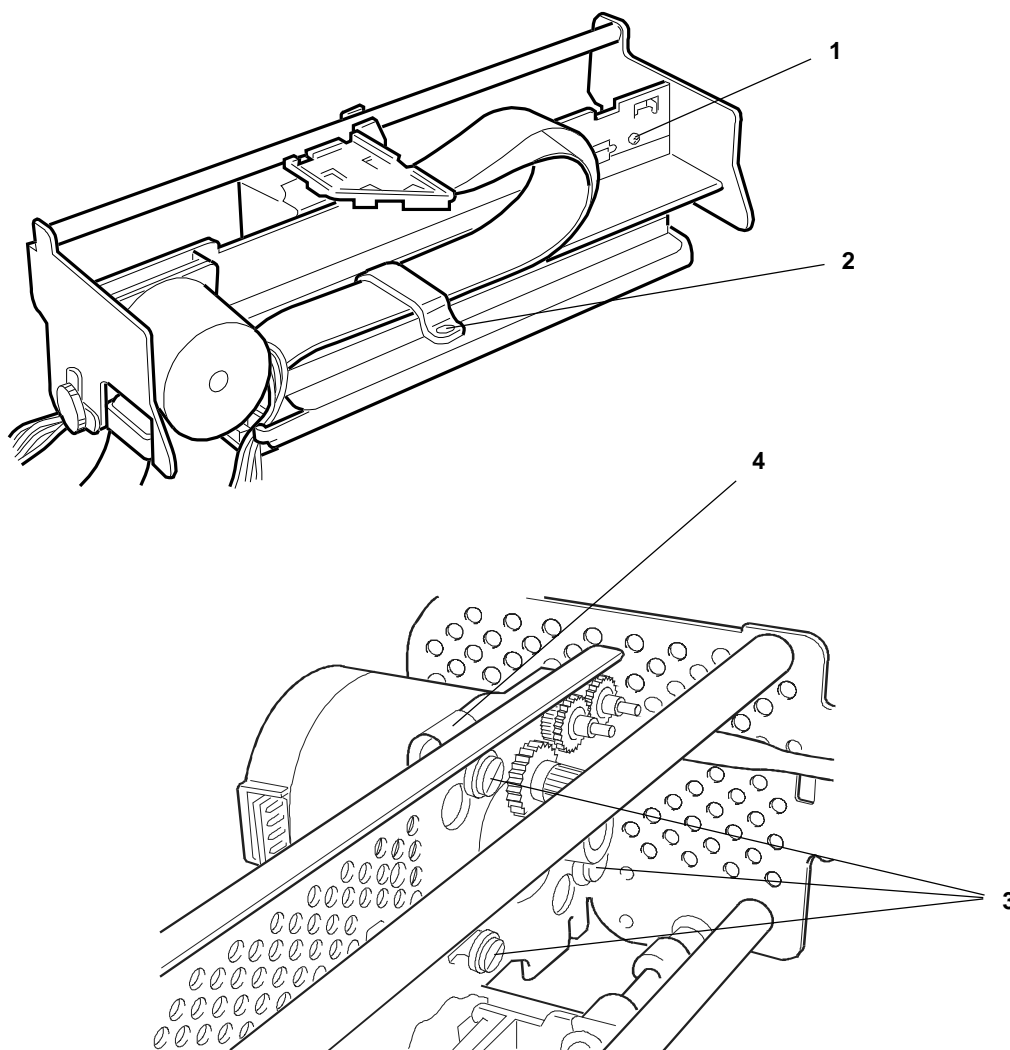


*Fig. 9-9*

**Note:** After reassembly, adjust the tension of the document feed belt (section 8.6).

### 9.2.9 PRINthead MOVEMENT MOTOR DISASSEMBLY/REASSEMBLY

- Remove the upper part of the mechanical assembly (section 9.2.7).
- Loosen the screw (1) that secures the return pulley support slide and then release the carriage movement belt from the motor pinion.
- Release the printhead flat cable by loosening screw (2) and then unscrew the three special securing screws (3) and then remove the printhead movement motor being careful to avoid damaging the ribbon feed gears.



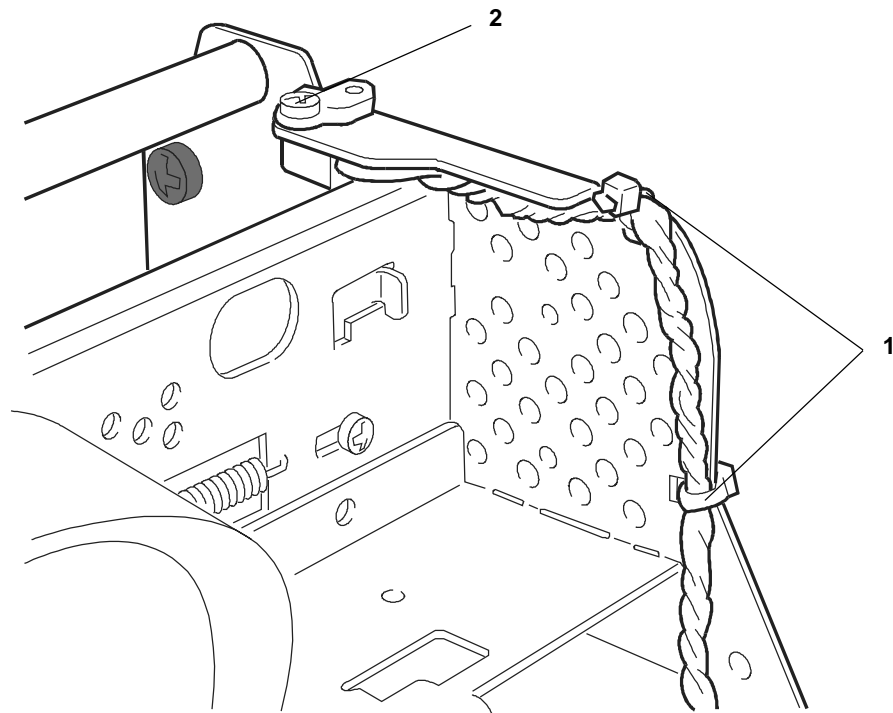
*Fig. 9-10*

**Note:** After reassembly, correctly reposition ground spring (4) and then adjust the carriage feed belt (section 8.9).



### 9.2.10 CARRIAGE RESET PHOTOSENSOR DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1) and console (section 9.2.2).
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board.
- Unplug the carriage reset photosensor cable from the main board and then release it from its plastic retaining clips.
- Cut the cable clips (1) and remove the photosensor by unscrewing screw (2).

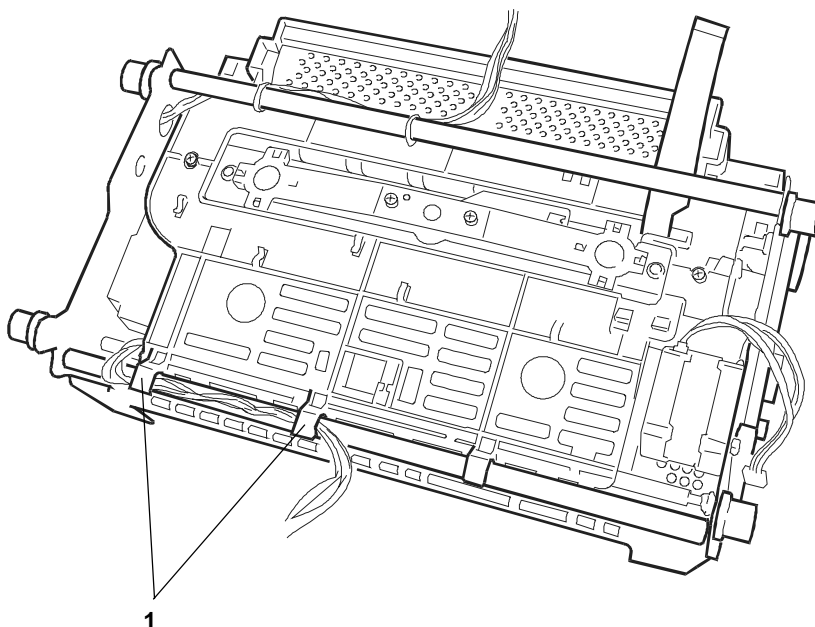


*Fig. 9-11*

**Note:** During reassembly, replace the cable clips.

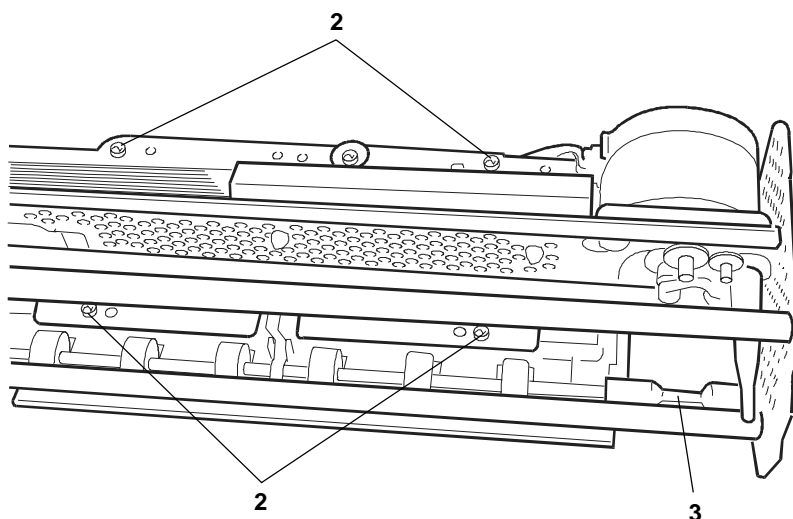
### 9.2.11 ROLLER SUPPORT TRAY DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1) and console (section 9.2.2).
- Remove the mechanical assembly, separating it from the base of the machine (section 9.2.3).
- Free the carriage reset photosensor wires from their plastic retaining clips (1).



*Fig. 9-12*

- Remove the upper part of the mechanical assembly (section 9.2.7).
- Remove the four screws (2) and then extract the tray, being careful to avoid losing the transmission joint (3) and the tray's soundproofing.

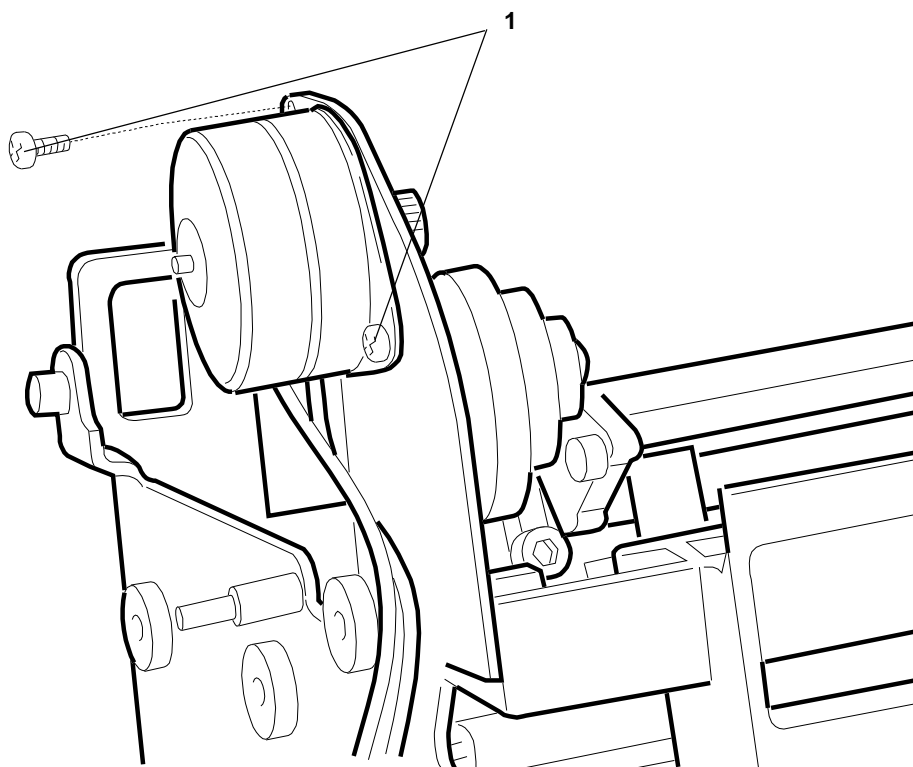


*Fig. 9-13*

**Note:** During reassembly, make sure to correctly reposition the transmission joint and soundproofing before tightening the screws.

### 9.2.12 SERVICES MOTOR DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1)
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board
- Unplug the services motor connection cable from the main board.
- Remove the two screws (1) that secure the motor to the left-hand side of the frame and remove the motor from the machine.



*Fig. 9-14*

### 9.2.13 FEEDER PHOTOSENSORS DISASSEMBLY/REASSEMBLY

- Remove the mechanical assembly (9.2.3).
- Remove the upper part of the mechanical assembly (9.2.7).
- Remove the roller shield after removing its M3 securing screws (1).

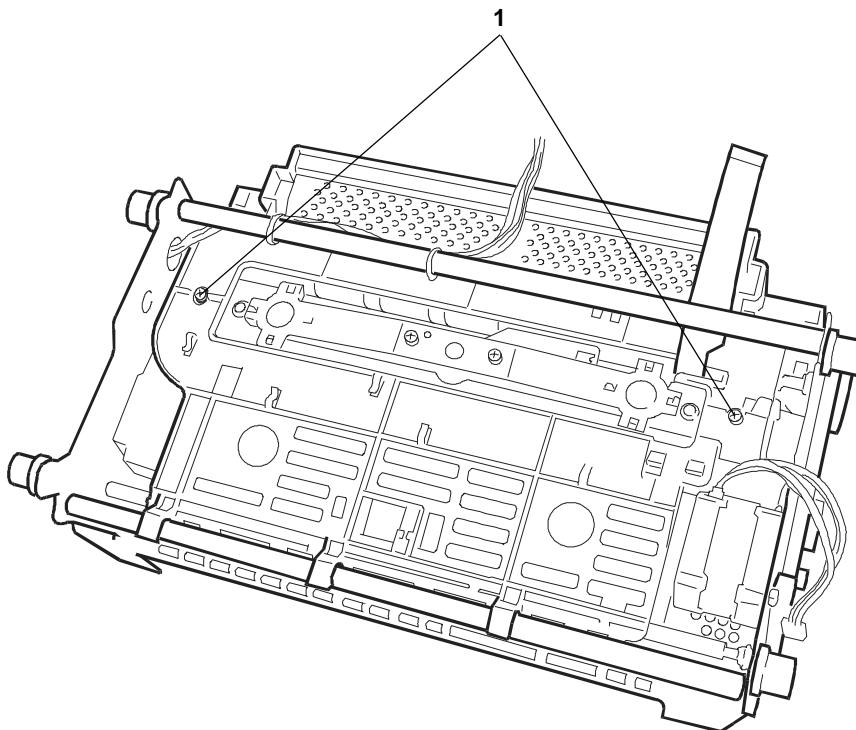


Fig. 9-15

- Unhook the two springs (2), straighten the document stop bar slide-proof fins (3) and then slide the stop bar from its guideways.

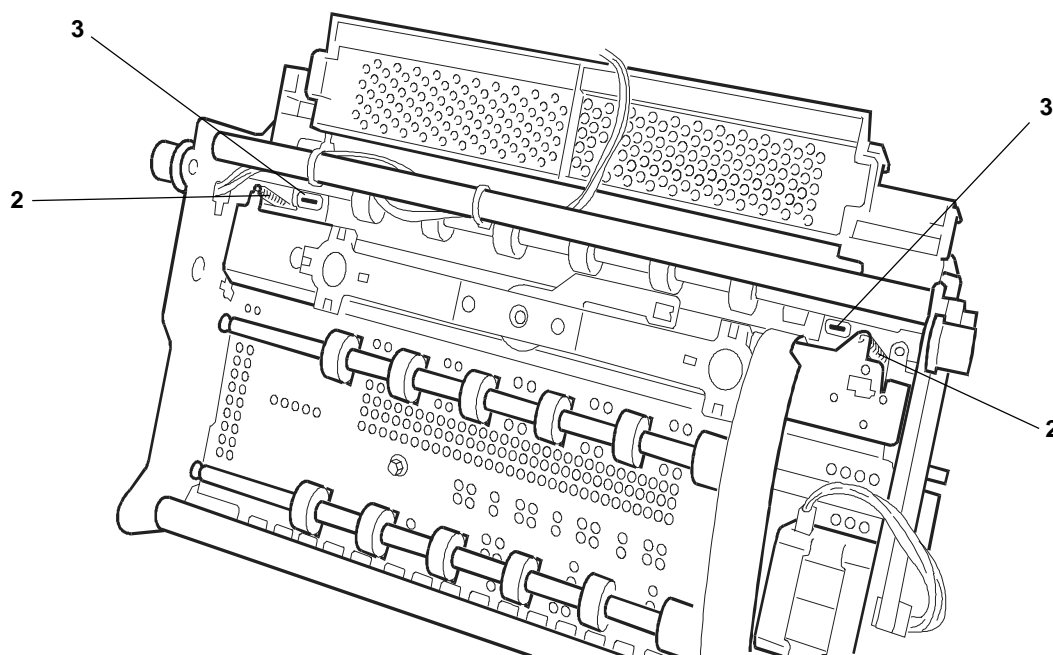


Fig. 9-16

- Remove bushing (4) from alignment pressure roller shaft (5) and then remove the entire assembly (6).

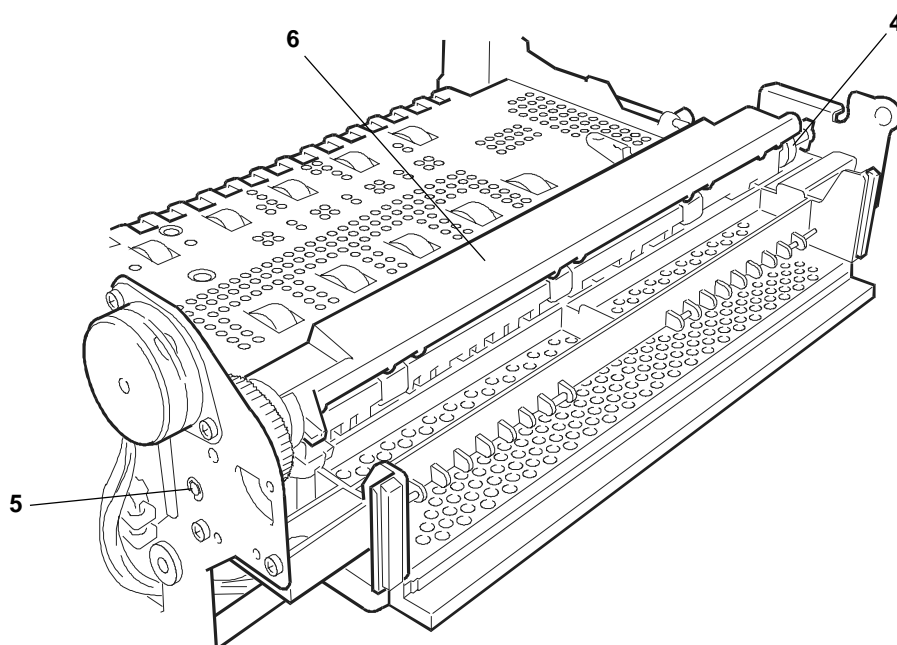


Fig. 9-17

- Remove the six screws (7) that secure the conveyor assembly (8).

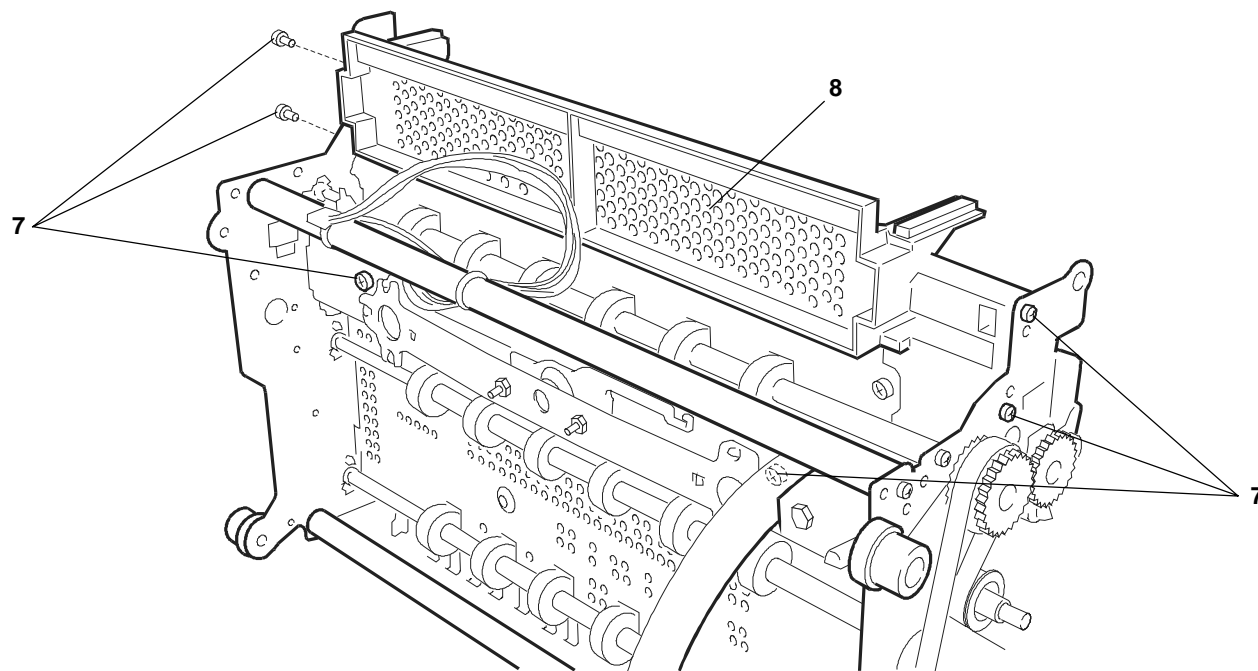
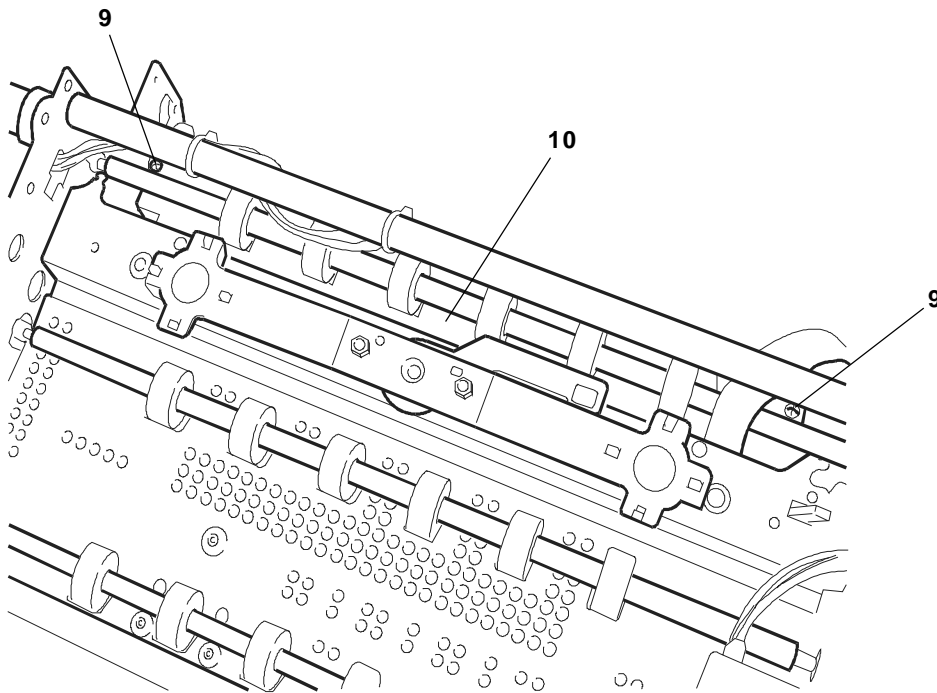


Fig. 9-18

- Remove the two screws (9) that secure photosensor support (10) and then remove the support.



*Fig. 9-19*

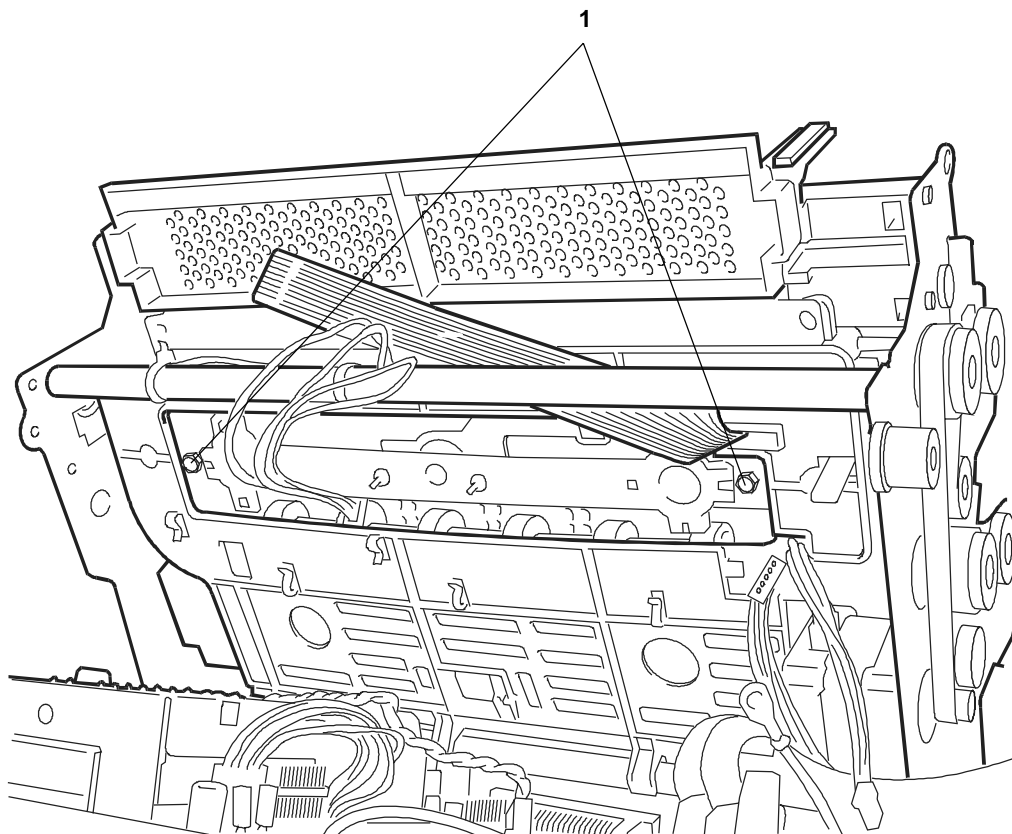
**Note:** When refitting the conveyor assy, make sure that you refit the related bushing before refitting the pressure roller assy.

During reassembly, do not secure the photosensor support until the conveyor assy is properly fitted since the conveyor assy has two reference pins for the photosensor support.

After reassembly, adjust the tab (section 8.4), the front pressure rollers (section 8.7), the opening of the tab (section 8.8) and then calibrate the photosensors (section 4.4.1).

### 9.2.14 PRINT BAR DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1)
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board.
- Unplug all the cables with the exception of the printhead cables.
- Unscrew the two nuts (1) that secure the print bar and then slide it off from the top.



*Fig. 9-20*

**Note:** After reassembly, adjust the distance between the printhead and print bar (section 8.2).

### 9.2.15 MAIN BOARD DISASSEMBLY/REASSEMBLY

- Power off the machine and unplug the power cord from the electrical outlet.
- Remove the mechanical assembly (section 9.2.3).
- Unplug the power supply cable (1) that connects the main board to the power supply assy.
- Remove the optional interface card (2), if installed.
- Remove the five screws (3) that secure the main board to the base.
- Unscrew the two connection screws (4) of the standard serial port.
- Remove shield (5).
- Extract the main board from the base of the printer.

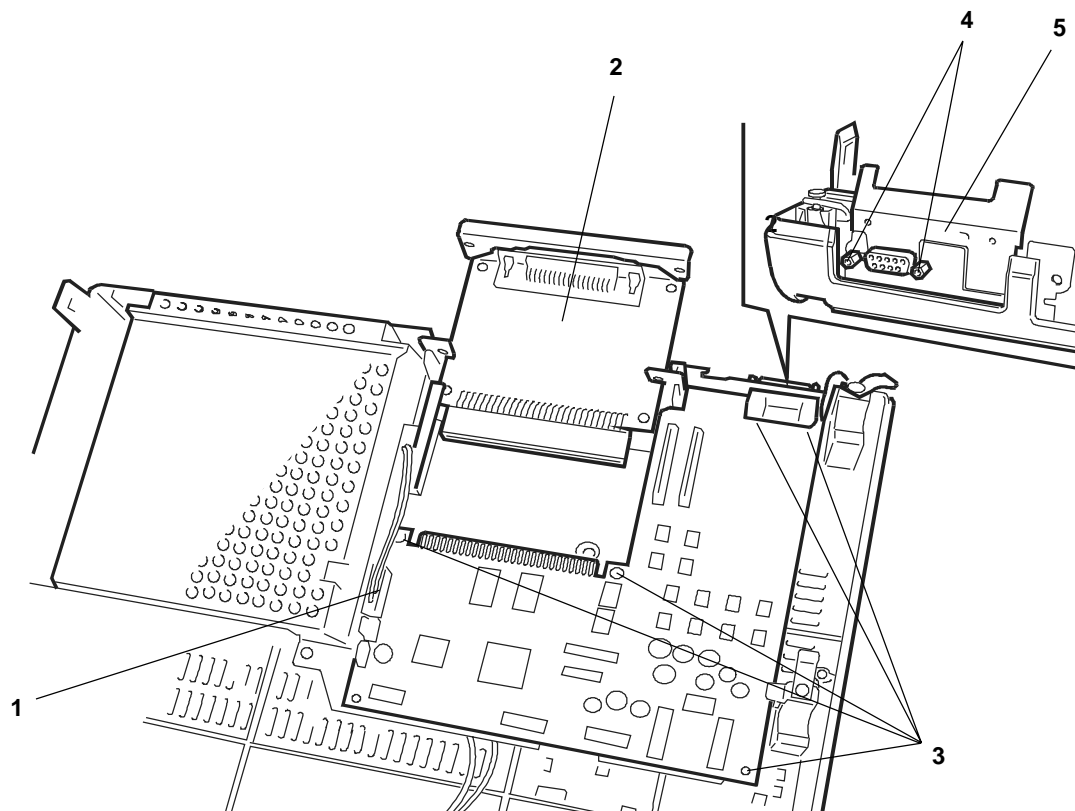


Fig. 9-21

**Nota:** Durante il rimontaggio del lamierino (4), bloccarlo dall'esterno della lamiera di supporto della piastra base.

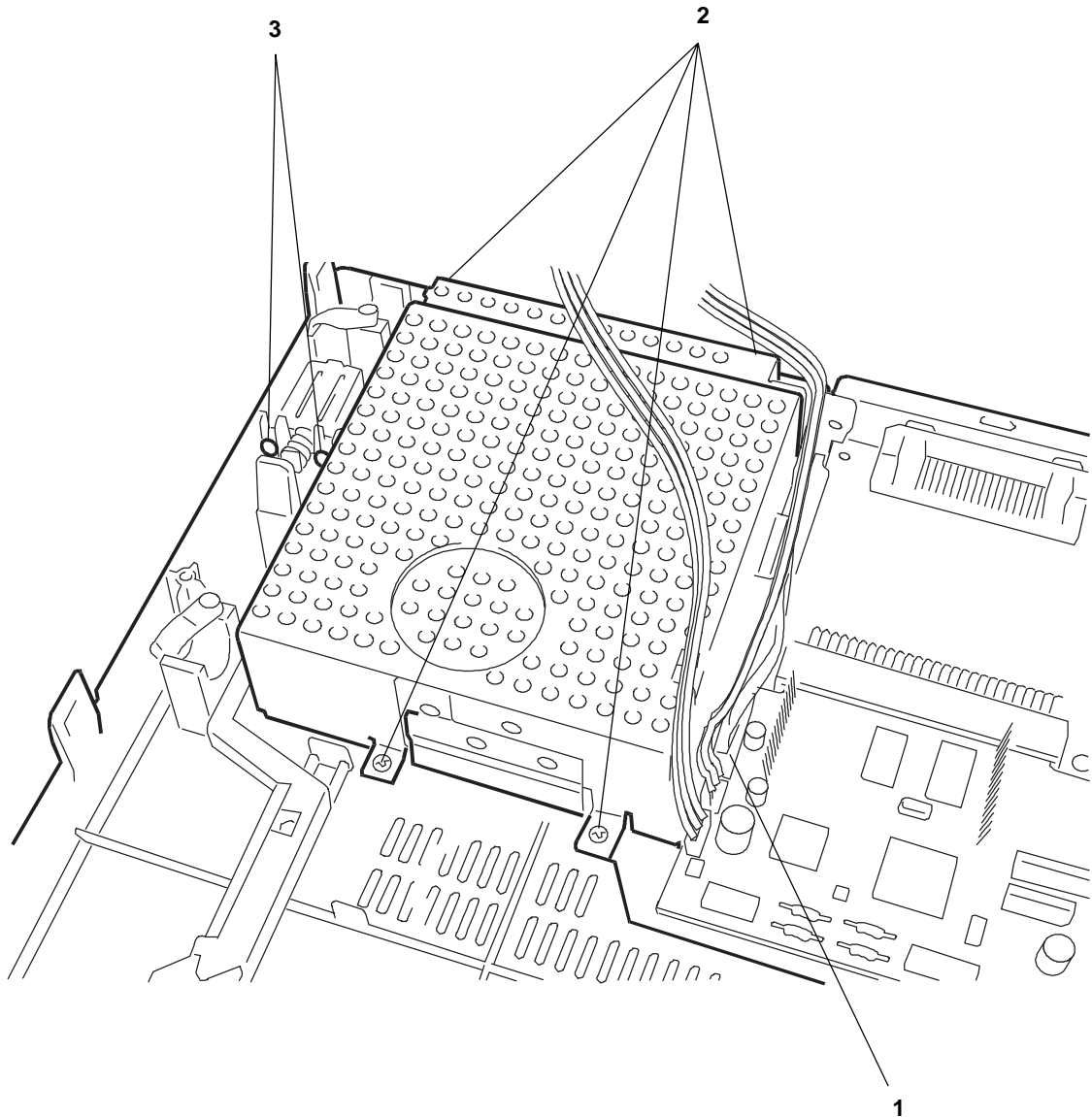
In caso di sostituzione della piastra, aggiornare il firmware secondo l'ultima release (paragrafo 1.11.1), effettuare il set up di installazione (paragrafo 4.3) e la taratura dei fotosensori (paragrafo 4.4).



### 9.2.16 POWER SUPPLY ASSY DISASSEMBLY/REASSEMBLY

**Note:** If the fuse inside the power supply has blown, replace the entire power supply assy since some components on the power supply board may be damaged.

- Remove the mechanical assy (section 9.2.3)
- Unplug the power supply cable (1) from the main board.
- Unscrews the four screws (2) that secure the power supply and also remove the ground wires.
- Loosen the two screws (3) that secure the switch.
- Extract the power supply assy.



*Fig. 9-22*

**Note:** During reassembly, make sure that you correctly reposition the ground cables.  
If you replace the assembly, make sure that the replacement unit uses the correct voltage.

## 9.3 BASIC MACHINE OPTIONS DISASSEMBLY/REASSEMBLY

### 9.3.1 HORIZONTAL MAGNETIC DEVICE/MICR DISASSEMBLY/REASSEMBLY

- Remove the printer case (section 9.2.1).
- Lift the front part of the mechanical assembly off the base of the printer, partly rotating it until you are able to reach the connectors on the main board (1).
- Unplug the cables connected to the magnetic options card.
- Remove the two screws (2) that secure the assembly to the machine frame and then remove this option.

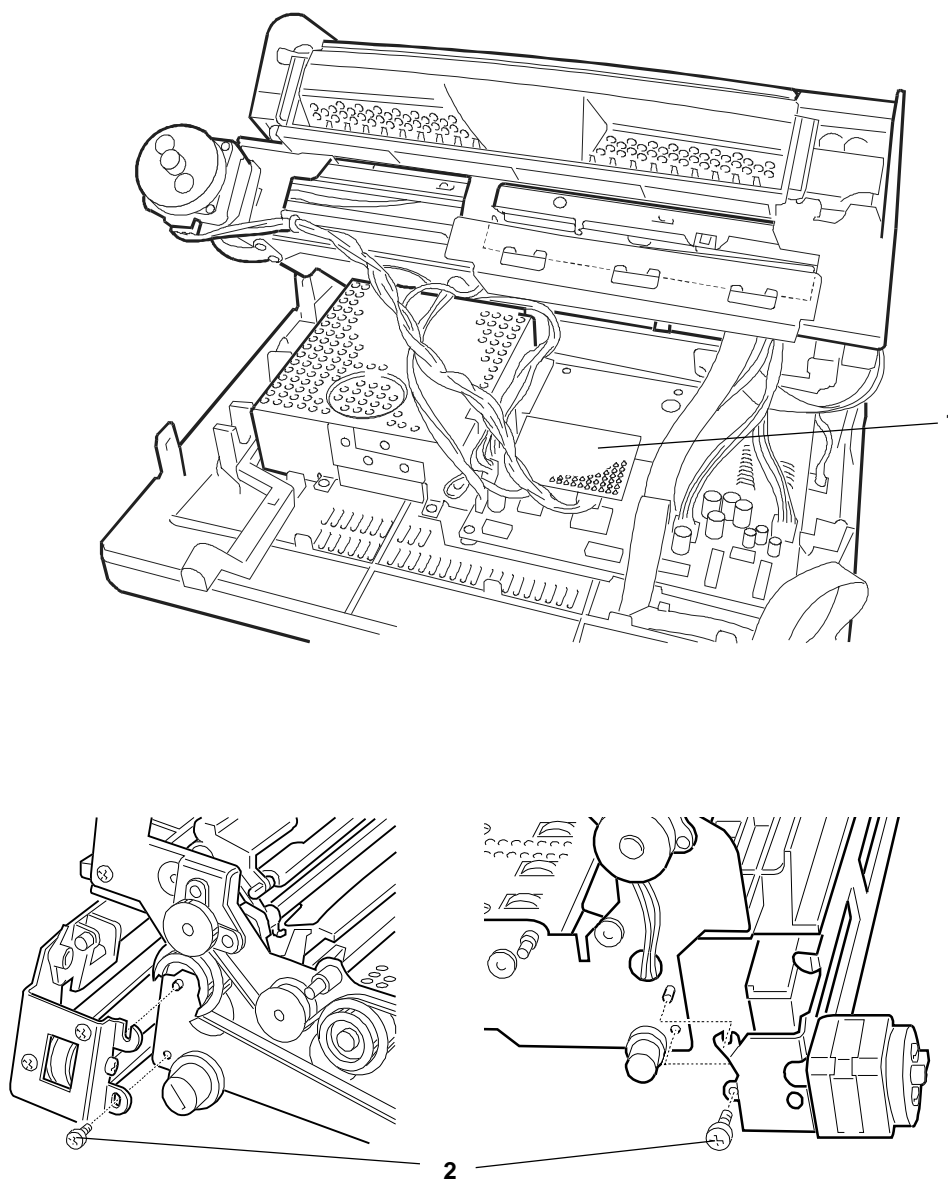
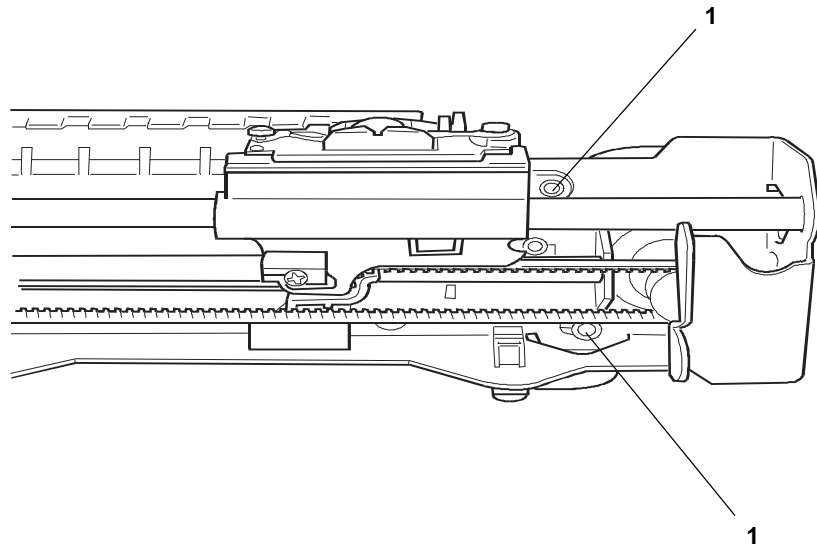


Fig. 9-23

**Note:** When refitting the assembly, adjust its position on the frame (section 8.12).

### 9.3.2 HORIZONTAL MAGNETIC DEVICE/MICR MOTOR DISASSEMBLY/REASSEMBLY

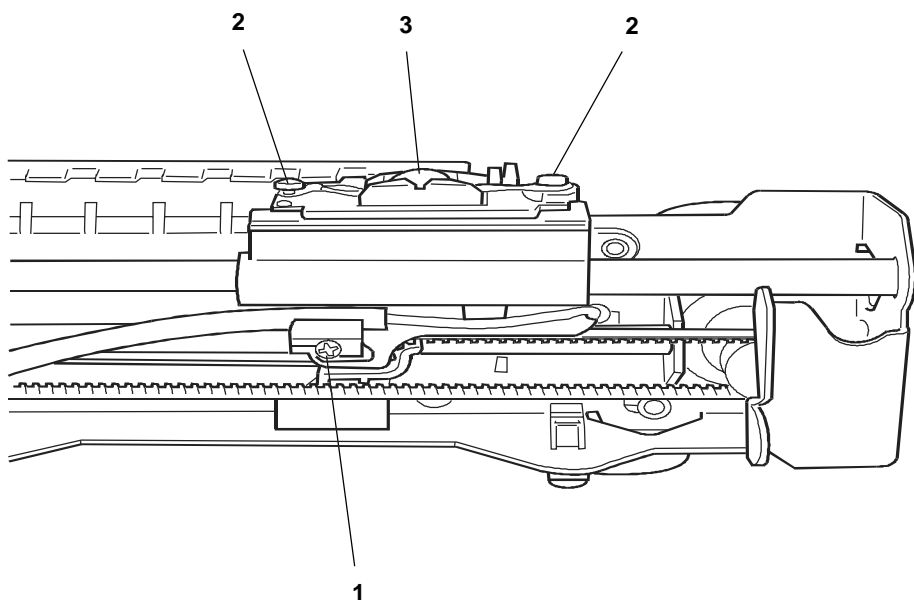
- Remove the printer case (section 9.2.1).
- Remove the horizontal magnetic device/MICR assy (section 9.3.1).
- Unplug the motor cable from the magnetic options card.
- Loosen the two screws (1) and then remove the motor with its related protective shield.



*Fig. 9-24*

### 9.3.3 HORIZONTAL MAGNETIC DEVICE/MICR HEAD ASSY DISASSEMBLY/ REASSEMBLY

- Remove the printer case (section 9.3.1).
- Remove the horizontal magnetic device/MICR (section 9.3.1).
- Loosen screw (1) to free the signals cable.
- Loosen screws (2) and remove the MICR head (3).



*Fig. 9-25*

## UPDATING STATUS

[illegible]